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ARE THERE CYCLIC CHANGES IN THE HUMAN VAGINAL MUCOSA?

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AND
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JERUSALEM, PALESTINE

Hitschmann and Adler showed that the human uterine mucosa undergoes cyclic morphologic changes, which depend on the ovarian function. Stockard and Papanicolaou, Long, Evans and Allen proved that in rodents not only the uterine mucosa but also the vaginal mucosa and vaginal secretion show cyclic morphologic changes determined by the ovarian function. Hence it is probable to assume that the human vagina is also under the influence of the ovarian hormones. Dierks [1] in 1927 showed that during the menstrual cycle definite proliferative and destructive changes occur in the human vaginal epithelium. In the first days after the beginning of the last menstrual period a division of the vaginal epithelium into three layers is noticeable. This is more strikingly marked during the premenstrual period. Through the early appearance of an intra-epithelial zone of cornification, the human vaginal epithelium may be divided into a functionalis, the layer of regeneration and change, and a basalis. Proliferation and sequestration take place in the functionalis. During menstruation the functionalis and partly the intra-epithelial zone of cornification are thrust off, so that a denuded basalis is left on the surface.

The investigations of Dierks have been repeatedly retested. The opinions of the authors vary. Stieve,[2] Stemshorn,[3] Kückens [4] and Gisbertz [5] could not confirm the results of Dierks. Geist [6] expresses his opinion in the affirmative but emphasizes that not every case shows the characteristic changes. While Dierks describes the division into three layers of the vaginal epithelium as the characteristic changes, Geist mentions the changes in the thickness of the mucosa and the vacuolization in the basalis. Smith and Brunner [7] also mention the vacuolization, which they find especially during the postmenstrual and premenstrual phase. Special attention is called to the work of Davis and Hartman,[8] who in their thorough investigations of a group of monkeys found the same typical cyclic changes in the vaginal epithelium as Dierks described for the human vaginal mucosa.

It would be of great importance for clinical and scientific research if a definite unmistakable "test object" were available to prove the presence of hormone activity. In human beings, one must essentially resort to the examination of the uterine mucosa. Although the removal of a piece of uterine mucosa is easily accomplished with our method on an ambulant patient (described later), it would be much simpler if one could use a strip of the vaginal mucosa for the test object. Since, according to the work of the aforementioned investigators, it seemed that the vaginal mucosa undergoes the same cyclic changes as the uterine mucosa and that it could as well be correlated with the ovarian activity, we tried to use the vaginal mucosa as an indicator for ovarian function. During our investigations we noticed that the changes of the vaginal mucosa are in no way comparable to the changes in the uterine mucosa. We could not be convinced—to say it beforehand—that any characteristic or specific changes occur in the vaginal mucosa during the various phases of the menstrual cycle. When we tried independently to examine the vaginal mucosa in order to determine its menstrual phase, we would always come to different conclusions. It was impossible to recognize from the histologic picture of the mucosa either the day or the phase of the menstrual cycle. Since with our method we could easily and without pain remove strips of the vaginal epithelium, we could also examine different parts of the vaginal mucosa of the same patient; for example, to the right and left near the portio at the same level, or at different levels near the portio and near the introitus vaginae. The results were that the vaginal mucosa of the different parts showed different histologic pictures, so that for instance in the same strip in one place the division into three layers is discernible, while in another place it is absent (figs. 1 and 2).

METHOD

The material on which the investigations have been based heretofore were obtained through biopsies, which occurred mostly during operations. Therefore it was possible to get from each patient a specimen of only one phase of the cycle. We used a simple method which the senior author is using for ambulatory examinations of the uterine mucosa. By means of a small, very sharp and, in front, curved curet, which was constructed for this purpose, a smear of the vaginal mucosa is made under pressure. Thus a strip of about 2 cm. in length and about 2 mm. in width can be easily removed. This is done without even local anesthesia and is absolutely painless. This procedure may be repeated as often as is necessary, so that it is possible to study without any difficulty the entire menstrual cycle on the same woman.

From the Gynecologic and Obstetric Department of the Rothschild-Hadassah Hospital, Jerusalem.

The experiments have been carried out with the support of the Rockefeller Foundation.

1. Dierks, K.: Arch. f. Gynäk. **130**: 46, 1927.
2. Stieve, H.: Ztschr. f. mikr.-anat. Forsch. **24**: 213 (April) 1931; Zentralbl. f. Gynäk. **55**: 194 (Jan. 24) 1931; Verhandl. d. anat. Gesellsch. **36**: 51, 1927.
3. Stemshorn: Zentralbl. f. Gynäk. **52**: 2387 (Sept. 15) 1928.
4. Kückens, Hans: Ztschr. f. Geburtsh. u. Gynäk. **96**: 55, 1929.
5. Gisbertz, H.: Arch. f. Gynäk. **136**: 362, 1929.
6. Geist, S. H.: Surg., Gynec. & Obst. **51**: 848 (Dec.) 1930.
7. Smith, B. G., and Brunner, E. K.: Am. J. Anat. **54**: 27 (Jan.) 1934.
8. Davis, M. E., and Hartman, C. G.: Changes in Vaginal Epithelium During Pregnancy in Relation to the Vaginal Cycle, J. A. M. A. **104**: 279 (Jan. 26) 1935.

We have been using a modified staining method of Papanicolaou in order that the cornification of the cells of the vaginal mucosa may be better discernible. The specimen was first stained with the hematoxylin-eosin method and, following it, counterstained with water-blue.

The following serve as our criteria:

1. The number of cell layers in the basalis.
2. The number of cell layers in the functionalis.
3. The presence of vacant cells in the functionalis.
4. Division of the mucosa into three layers: basalis, functionalis and the intra-epithelial zone of Dierks.
5. Degree of intra-epithelial cornification.

The results of observations on the various days of the cycle are seen in the accompanying tables.

TABLE 1.—*Vaginal Mucosa of Various Phases of Normally Menstruating Women*

Case	Menstruation	Number of Cell Layers of Basalis	Number of Cell Layers of Functionalis	Vacant Cells	Three Layers	Cornification
1 (*a*)	1st day	8–10	12–16	++	—	±
2	5th day	6– 9	10–16	+	—	+
3	6th day	4– 8	10–12	++	—	±
4	8th day	4– 7	16–18	++	—	—
5	10th day	5– 7	14–18	++	—	—
6	10th day	7–13	6– 8	++	+	±
7	10th day	3– 6	10–12	++	—	+
8	10th day	7–11	10–12	—	±	+
1 (*b*)	11th day	4– 7	14–20	+	±	+
9	13th day	7– 9	16–20	+	+	+
10	14th day	2– 3	20–24	+++	—	±
11	15th day	4– 6	18–22	+++	—	±
12	17th day	4– 8	18–20	++	—	±
1 (*c*)	18th day	3– 5	12–16	+++	+	++
1 (*d*)	21st day	10–12	14–18	+++	—	+
13	22nd day	5– 7	14–18	++	—	—

Without going into detail, it should be mentioned that we found the same picture in different phases of the cycle. Thus for example we found on the twenty-second day of the cycle (case 13) in the basalis from five to seven and in the functionalis from fourteen to eighteen cell layers, many vacant cells in the functionalis, no division into three layers and no cornification. Almost the same changes were seen on the eighth day of the cycle (case 4). Figure 3 shows on the twenty-second day of the cycle no sign in the vaginal mucosa which should be characteristic for the changes of the premenstrual phase. Figures 1 and 2, the mucosa of the sixth day of the cycle (case 3), on the other hand, shows in one place an intra-epithelial zone of Dierks, which is characteristic for the premenstrual phase. A piece of the mucosa of the same patient, which was removed from another part of the vagina, shows no intra-epithelial zone of cornification, fewer cell layers, a picture which corresponds to the postmenstrual phase. Thus is seen on the sixth day of the cycle (case 3) in the same vaginal mucosa two different pictures, the one corresponding to the premenstrual and the other corresponding to the postmenstrual phase.

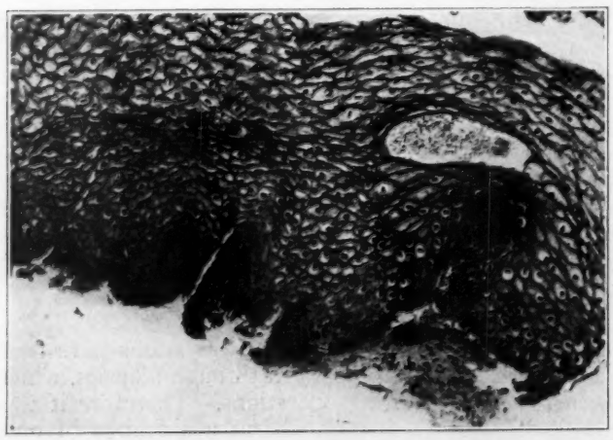

Fig. 1 (case 3).—Sixth day of the cycle. Mucosa near portio to the right. Note the thickness of the basalis and the intra-epithelial zone of the cornification, which is absent in figure 2.

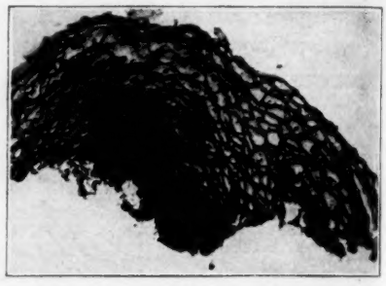

Fig. 2 (case 3).—Sixth day of the cycle. Mucosa below the portio to the right.

AMENORRHEA

The large material of functional ovarian disturbances at our disposal in our clinic enabled us to remove a large number of vaginal strips from patients with amenorrhea. The results are summarized in table 2. The observations in cases of primary amenorrhea are of special importance. In these cases the genitals show the characteristic poor development (atrophic labia, hypoplastic uterus and atrophic uterine mucosa). On the vaginal mucosa, however, this functional disturbance of the ovaries was not noticeable. In patient 14, a woman aged 29 who had never menstruated, we found a basalis of from five to six cell layers, a functionalis of twelve to twenty-two cell layers, numerous vacant cells in the functionalis (+ + +) and no intra-epithelial zone of cornification. Almost the same changes were seen on the seventeenth day of the cycle of a normally menstruating woman (patient 12). The cornification differed greatly in the cases of primary amenorrhea. In cases 14 and 15 it was absent, and it was present in cases 17 and 18. In cases of primary amenorrhea we were able to produce menstrual bleeding; i. e., bleeding of a proliferative and premenstrual mucosa. If we injected into a patient with primary

TABLE 2.—*Vaginal Mucosa of Patients with Primary and Secondary Amenorrhea*

Case	Amenorrhea, Years	Cell Layers of Basalis	Cell Layers of Functionalis	Vacant Cells	Three Layers	Cornification	Treatment
			Primary Amenorrhea				
14	...	5-6	12-22	+++	—	—	
15 (*a*)	...	3-4	12-14	++	—	—	
15 (*b*)	...	4	12-16	±	—	+	300,000 mouse units of estrogenic substance
16	...	5	10-12	++	—	++	
17	...	7-9	15-18	++	—	+	
18 (*a*)	...	4-5	10-12	+	—	±	
18 (*b*)	...	6	20-26	++	—	—	
18 (*c*)	...	5-7	10-14	+	±	±	450,000 mouse units of estrogenic substance
			Secondary Amenorrhea				
19	2½	8-11	12-16	+	—	+	
20	8	5-7	12-14	+	+	++	
21	1¼	7-9	16-18	±	+	++	
22	1	5-6	14-16	++	±	+	
23	5	6-8	14-16	+	+	++	
24	2	5-8	12-16	—	—	+	
25	3½	5-6	14-18	++	+	+	
26	1¾	5-9	18-20	+++	—	—	
27	2	5-7	18-20	+	—	—	
28	3	5-7	8-10	+	±	+	

amenorrhea from 300,000 to 400,000 mouse (international units) of estrogenic substance [9] during twenty days, bleeding out of a proliferative uterine mucosa usually occurred a few days later. If following the injection of estrogenic substance the patient is further treated with 40 rabbit units (Clauberg units) of progestin for from five to six days, bleeding occurs out of a premenstrual mucosa from two to three days after cessation of the treatment, which is generally known. The uterus shows a measurable increase in size up to normal. Hence an atrophic uterus in a patient with primary amenorrhea can be brought to good function, the uterus can be stimulated generatively and vegetatively, but characteristic changes cannot be found in the vaginal mucosa of such patients (fig. 4). A glance at the uterine mucosa in such cases suffices to recognize the specific hormone effects. But on the vaginal mucosa, on the other hand, it is impossible to determine whether the specimen was removed before or after the injections.

In cases of secondary amenorrhea, we could likewise not notice on the vaginal mucosa any signs of deficiency or absence of the ovarian function, while on the uterine mucosa it was distinctly recognizable. In patient 20 (a woman, aged 30, with amenorrhea of eight years' duration) a picture is seen which is described in the

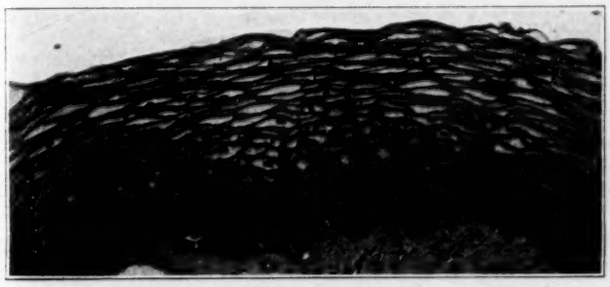

Fig. 3.—Mucosa of the twenty-second day of a normally menstruating woman.

literature for the premenstrual changes: a basalis of from five to eight and a functionalis of from twelve to fourteen cell layers, division into three layers, and cornification (fig. 5).

THE INFANTILE VAGINAL MUCOSA

We had the opportunity of examining the vaginal mucosa of girls aged from 4 to 8 years who suffered from acute or subacute gonorrhea. The children were treated with large doses of estrogenic substance in order to influence the gonococcic infection. (The results are reported elsewhere.) What interests us here is the appearance of the infantile vaginal mucosa and the morphologic changes brought about by the estrogenic substance. The mucosa consists of about ten to sixteen cell layers. The cells are round, are rich in protoplasm and contain dark staining nuclei. Vacant cells are absent and so are cornification and the three layered appearance. After three weeks' treatment with estrogenic substance a distinct change is noticeable. The superficial cell layers become flattened and partially vacuolized just as in a functionalis of an adult. The division into three layers is not seen. These are the only definite characteristic changes that we have noticed during our investigation. What does this result mean? It is possible to consider it as a hormone effect which causes the morphologic changes in the vaginal mucosa. But one must be cautious in this interpretation, since similar changes have not been found in patients with amenorrhea who have been treated with estrogenic substance. One must think of a different possibility. The genital tract becomes hyperemic through the estrogenic substance, and under the effect of this hyperemia changes may occur in the infantile genital tract which are not found in the adult. It should also be mentioned that Stieve, in examining Dierks' observations,

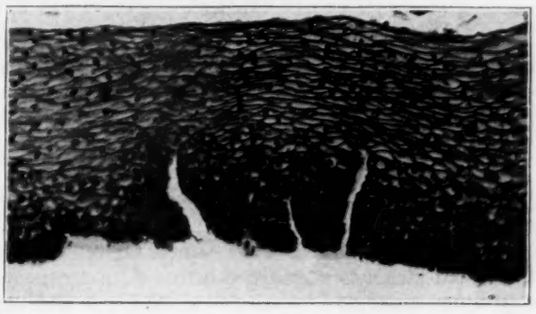

Fig. 4.—Primary amenorrhea. Bleeding after injection of 400,000 mouse units of estrogenic substance.

found analogous changes as in the vaginal mucosa in other mucous membranes (mouth and pharynx). It is naturally impossible to remove pieces of the mucous membrane of the mouth or pharynx from a living person, and especially from a child, so that it is difficult to prove this theory.

Our results surprised us. Since the uterus and vagina are both derived—as was believed till now—from the müllerian duct, it would be expected that the two should be affected in the same manner and degree by the ovarian hormones. The explanation for these negative results may be found in the work of Koff.[10] "The uterus is derived in all animals from the müllerian duct. The development of the vagina is more recent and varies in different species. In man it is derived partially from the müllerian duct and partially from the urogenital sinus. In the human embryo the stimulation for the formation of the vagina begins from two sinovaginal bulbs, which later fuse and form the

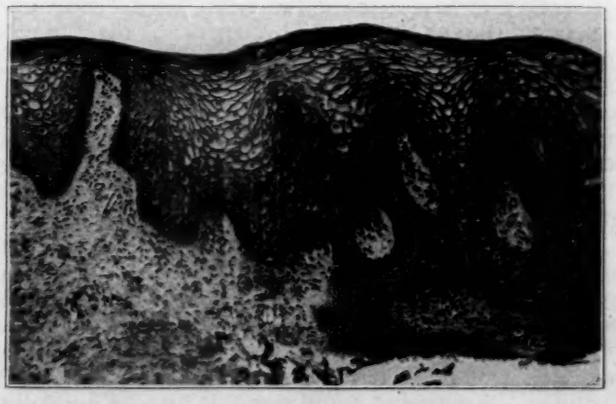

Fig. 5.—Secondary amenorrhea of eight years' duration. Thick mucosa, divided into three layers, with intra-epithelial cornification.

caudal or hymenal part of the vaginal plate. The vagina would fail to develop if these sinovaginal bulbs should be damaged. For its greater part the vagina is derived from the müllerian duct. Thus the human vagina is derived from two distinct parts." Hence it is explainable that the vagina in different species reacts

9. We used Dimenformon (hydroxyestrin benzoate) kindly supplied to us by Organon, Oss, Holland.

10. Koff, A. K.: Carnegie Institution, Washington, pub. 443, Contributions to Embryology no. 140, 24, 59-91, 1933.

differently, that in one species it may and in another it may not be subject to the cyclic influence of the ovaries.

Since R. Meyer [11] and E. Vilas have shown that the sinus epithelium is replacing the disappearing müllerian epithelium in the development of the human vagina and that the müllerian ducts serve only to pave the way for the sinus epithelium, one cannot even expect the human vagina to respond to hormones in the same way as does the uterus.

CONCLUSIONS

1. In the human vaginal mucosa we could not find cyclic changes analogous to those of the uterine mucosa.
2. The vaginal mucosa shows different microscopic pictures in different places.
3. In deficient ovarian function (primary amenorrhea) is found a picture of a mucosa similar to one with good ovarian function, with even the same changes as in the premenstrual phase.
4. In the absence of ovarian function, by means of ovarian hormones (estrogenic substance, progestin) we could produce enlargement of the uterus, a proliferative and a premenstrual uterine mucosa and menstruation, but we could not find analogous changes in the vaginal mucosa.
5. In human beings the infantile vagina may be influenced by estrogenic substance, but it is not certain whether it is because of a specific hormone effect on the vaginal mucosa or on the mucous membranes in general.
6. Since the vagina is developed embryologically different in different species, the different reaction of the vaginal mucosa is explainable.

CHRONIC CARDIAC COMPRESSION DUE TO CONSTRICTING PERICARDITIS

RELIEF BY PERICARDIECTOMY, WITH A NOTE ON THE VALUE OF THE ROENTGENKYMOGRAM

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In the realm of practical surgery the only direct operative attacks that may be made on the central circulatory system are for the relief of cardiac compression, acute or chronic. This comprises the removal of intrapericardial fluid, the prevention of its reaccumulation (including the suture of wounds of the heart), and the resection of constricting scar. The extraction of pulmonary emboli, the direct attack on valvular lesions and attempts to increase the blood supply of the heart are still within the domain of experimental surgery.

A syndrome which has increasingly engaged the attention of clinicians, especially during the past fifteen years, is that caused by a lesion variously designated as adhesive pericarditis, Pick's disease, mediastinopericarditis, concretio pericardii, pericarditic pseudocirrhosis and a host of other terms descriptive of its pathologic anatomy. Volhard,[1] Schmieden,[2] White,[3] Churchill [4] and others [5] have contributed important studies during the last ten years, but the most outstanding contributions have been those of Beck.[6] He has crystallized the physiologic point of view in place of the older anatomic and pathologic concepts. His experimental and clinical studies have shown that compression of the heart from any cause produces the "inflow stasis" of Volhard.[1] The amount of blood entering the heart is reduced as the result of pressure on the orifices of the great veins and by restriction of diastolic expansion of the auricular and ventricular chambers. The resulting clinical manifestations differ only in the rapidity with which compression occurs and not in the cause of compression. Rapidly increasing pressure gives rise to a syndrome characterized by the clinical triad of (1) falling arterial blood pressure, (2) rising venous blood pressure and (3) a small quiet heart. Slowly developing compression exhibits the triad of (1) high venous blood pressure, (2) ascites and (3) a small quiet heart.[6d] In both these triads the size of the heart itself must be distinguished from that of the pericardial sac. It should be emphasized that the compressed heart cannot dilate on account of the mechanical effect of compression. Hypertrophy is likewise prevented by the obstructive action of pressure on the coronary circulation. Schmieden [2] especially has stressed the impaired nutrition of the myocardium that results from compression of the heart.

When one appreciates these physiologic sequelae of cardiac compression, the diagnosis of these formerly obscure conditions is less difficult and their relief becomes a matter of carefully applied surgical attack on the cause. The recognition of cardiac compression is still so infrequent, however, that additional aids to diagnosis are of value, especially such an aid as can give a positive record of the amplitude of cardiac excursion before and after treatment. Cases treated by surgery are also sufficiently rare that records may be of value in developing and evaluating the worth of operative procedures.

REPORT OF CASE

History.—H. B., a white youth, aged 17, an apprentice jockey, admitted to the Louisville City Hospital, Jan. 17, 1935, complained of painless swelling of the abdomen, which had increased progressively for three months. He had had occasional night sweats a few years before. There was no history of rheumatic fever, pneumonia or pleurisy. He had noticed excessive fatigue for about six months. Dyspnea on exertion had appeared coincident with the abdominal swelling. His weight had increased from 118 to 130 pounds (53.5 to 59 Kg.), but he stated that he seemed to have lost weight from the shoulders and extremities. There had been no visible jaundice and no swelling of the feet or ankles. Other symptoms included a slight cough, moderate discomfort in the upper right quadrant of the abdomen, and puffiness of the face in the morning. There had been one attack of precordial pain five days before admission. Nausea and vomiting had occurred a few times since the onset. For several weeks orthopnea had been sufficient to disturb his sleep.

Examination.—Slight dusky cyanosis of the face was apparent on examination. Both external jugular veins were distended and pulsating. The sclerae were yellowish. Aside from flatness and distant breath sounds in the left base, the lung fields were normal. The heart was small and the apex beat was

11. Meyer, R.: Arch. f. Gynäk. **158**: 639-738, 1934.

From the Department of Surgery, Louisville City Hospital, and the University of Louisville School of Medicine.

1. Volhard and Schmieden: Klin. Wchnschr. **2**: 5 (Jan. 1) 1923.

2. (*a*) Schmieden, V.: Acta chir. Scandinav. **57**: 268, 1924; (*b*) Zentralbl. f. Chir. **51**: 46 (Jan. 12) 1924; (*c*) Arch. f. klin. Chir. **138**: 552, 1925; (*d*) Surg., Gynec. & Obst. **43**: 89 (July) 1926. (*e*) Schmieden, V., and Fischer, H.: Ergebn. d. Chir. u. Orthop. **19**: 98, 1926.

3. Sprague, H. B.; Burch, H. A., and White, P. D.: New England J. Med. **207**: 483 (Sept. 15) 1932. White, P. D.: Lancet **2**: 539 (Sept. 7), 597 (Sept. 14) 1935.

4. Churchill, E. D.: Decortication of the Heart (Delorme) for Adhesive Pericarditis, Arch. Surg. **19**: 1457 (Dec.) 1929. Gibbon, J. H., Jr., and Churchill, E. D.: J. Clin. Investigation **10**: 405 (June) 1931.

5. Burwell, C. S., and Strayhorn, W. D.: Concretio Cordis: Arch. Surg. **24**: 106 (Jan.) 1932. Burwell, C. S., and Flickinger, D. D.: Obstructing Pericarditis, Arch. Int. Med. **56**: 250 (Aug.) 1935. Flick, J. B., and Gibbon, J. H., Jr.: Pericardiectomy for Advanced Pick's Disease, Arch. Surg. **29**: 126 (July) 1934.

6. (*a*) Beck, C. S., and Griswold, R. A.: Pericardiectomy in the Treatment of the Pick Syndrome, Arch. Surg. **21**: 1064 (Dec., pt. 2) 1930. (*b*) Beck, C. S.: The Surgical Treatment of Pericardial Scar, J. A. M. A. **97**: 824 (Sept. 19) 1931. (*c*) Beck, C. S., and Cushing, E. H.: Circulatory Stasis of Intrapericardial Origin, ibid **102**: 1543 (May 12) 1934. (*d*) Beck, C. S.: Two Cardiac Compression Triads, ibid. **104**: 714-716 (March 2) 1935.

neither visible nor palpable. Heart sounds were distant but regular, and there were no adventitious sounds. The pulse rate at rest varied from 80 to 100 per minute and the blood pressure was 100 mm. of mercury systolic, 70 diastolic. Broadbent's and other signs characteristic of retraction of the chest wall by extrapericardial adhesions were absent. There was slight edema of the scrotum but not of the extremities. The abdomen was distended with fluid, and 6,000 cc. of this fluid was removed by paracentesis. It was transudate in nature and was sterile on culture and on guinea-pig inoculation. After paracentesis

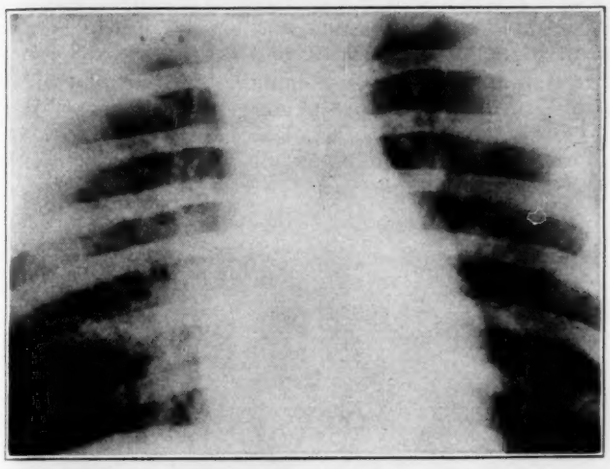

Fig. 1.—Preoperative appearance of the chest. The heart is not enlarged. There is widening of the upper mediastinal shadow, owing to the distended superior vena cava.

the liver was found to extend three fingerbreadths below the costal margin, and the spleen was easily palpable. Both were slightly tender. The ascites rapidly recurred, weekly taps yielding 3,200 cc., 5,000 cc., 5,000 cc. and 5,000 cc. Routine laboratory tests showed nothing remarkable except an icterus index of 45. Six foot roentgenograms of the chest showed the heart-chest ratio to be 12.4 cm.-29.3 cm. There were calcification in the root areas and increased markings consistent with an old tuberculous process (fig. 1). On fluoroscopy no motion of the ventricles could be made out. The excursion of the auricles appeared to be slightly exaggerated and a definite pulsating superior vena cava was visible. The electrocardiogram showed a small, slurred QRS complex and sufficient change in the shape of the complexes with change of position of the patient to rule out fixation of the heart in the chest. Determination of the cardiac output by the dye injection method was carried out by Dr. John Walker Moore and Dr. J. M. Kinsman. The minute volume output was 3.76 liters and the stroke volume output 36.9 cc. Venous pressure taken by the direct method in the right arm was 240 mm. of physiologic solution of sodium chloride.

It will be noted that the conditions found in this case satisfied the requirements of the triad of chronic cardiac compression; that is, high venous pressure, ascites and small quiet heart. In addition there was decompensation out of proportion to apparent cardiac disturbance and ascites out of proportion to edema, both of which are important corroborative manifestations. The low pulse pressure, fluoroscopic observations and small slurred QRS complex were suggestive. The mobility of the heart in the chest ruled out fixation by extrapericardial adhesions, but it should be noted that chronic cardiac compression produced by scar can exist without fixation of the heart.[7]

Diagnosis.—At about this time Johnson completed the roentgenkymograph that he has described.[8] This gave most gratifying and irrefutable evidence of the reduced amplitude of cardiac pulsation and of the throttling effect of this disease on the heart. It also supplied a graphic record that could be compared with postoperative plates to demonstrate the efficacy of pericardiectomy. The roentgenkymogram taken just before operation showed absolute lateral immobility of both ventricular regions, indicating a marked degree of compression (fig. 2). The left auricular curve was abnormal and somewhat exaggerated. The aortic waves were greatly diminished, a result of the low pulse pressure. Since there was no lateral ventricular motion and absolute ventricular immobility would not be compatible with life, it seemed reasonable to suppose that the augmented auricular curve was produced by upward diastolic expansion of the ventricular chambers into the auricular region. This would be merely an exaggeration of the normal diastolic shift of the auriculoventricular septum.[9]

Operation.—This was performed February 22, under combined procaine intercostal block and closed nitrous oxide-oxygen anesthesia. The technic in general was that which has been previously described.[10] The exposed pericardium was dense, white, leathery and almost motionless, although transmitted pulsation could be felt. When the scar was incised it was found to be from 2 to 3 mm. thick and was everywhere adherent to the heart. Dissection was carried out over the left side of the heart first, following the suggestion of Schmieden,[2d] to avoid undue dilatation of the right heart. As the dissection progressed, the heart could clearly be seen to enlarge and to bulge out of its constricting shell. Dissection was carried out until the finger could be swept completely around the heart over the auricles and ventricles. The heart could be easily lifted forward and upward to give a complete view of the intrapericardial portion of the inferior vena cava. Dissection over the auricles was by sharp knife. Over the ventricles, a combination of blunt and sharp dissection was utilized. The pericardium was excised laterally back to the region of both phrenic nerves and on the diaphragmatic aspect to within 2 cm. of the vena cava. Several small openings were made into both pleural cavities but were easily compensated for by positive pressure anesthesia. These openings were closed with silk with the exception of one into the left pleura, which was enlarged to 4 cm. and left open to provide drainage from the field of operation into the pleural cavity. The soft parts of the chest were closed in layers with fine silk without drainage. Hemostasis was obtained throughout by the endotherm. Pathologic exam-

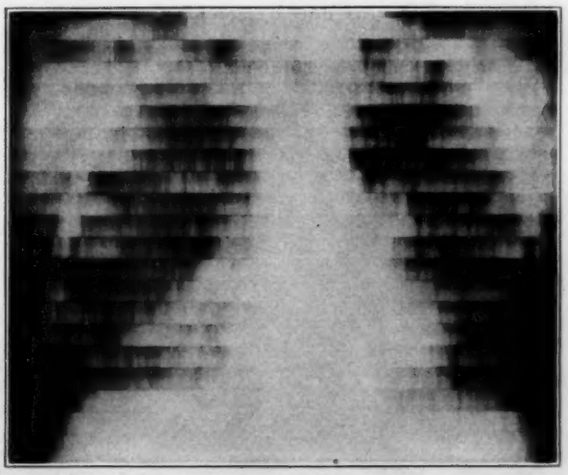

Fig. 2.—Preoperative roentgenkymogram showing no waves over either ventricular area. This clearly indicates complete absence of lateral ventricular movement due to the choking effect of the tight inelastic pericardial scar. The exaggerated abnormal auricular waves are probably caused by the upward thrust of the ventricles into the auricular space during ventricular diastole, since this is the only avenue possible for ventricular expansion. Aortic waves are diminished in consequence of low pulse pressure.

ination of the excised scar showed much scarred pericardium with residual active chronic inflammation. There was no evidence of tuberculosis.

Several points in the technic of this procedure may well be emphasized. It should be the rule in all cardiac

7. Beck and Griswold.[6a] Sampson, J. J., and Rosenblum, Harold: Am. Heart J. **10**: 240 (Dec.) 1934.
8. Johnson, S. E.: Surg., Gynec. & Obst. **61**: 169 (Aug.) 1935.
9. McKenzie, James: Diseases of the Heart, ed. 2, New York, Oxford University Press, 1910, p. 17.
10. Beck and Griswold.[6a] Griswold, R. A.: Kentucky M. J. **31**: 501 (Oct.) 1933.

operations to have intratracheal or positive pressure anesthesia available to compensate for probable injury to the pleura. Dissection of the scar from the heart must be carried out with great care. Forceful blunt dissection is contraindicated, since in many instances scar and even calcium deposits may extend into the myocardium. Meticulous sharp dissection is especially advisable over the auricles, the thin walls of which are seldom so strong as the fibrous adhesions. Blunt dissection may be most gently and safely carried out over the ventricles by allowing the rhythmic contractions of the myocardium to break the adhesions as the finger lies motionless in the angle formed by the heart and the freed portion of the myocardium. Manipulations within the pericardium cause considerable cardiac irregularity, and frequent periods of rest are necessary to restore normal rhythm and maintain cardiac function within safe limits. Haste has no place in this operation.

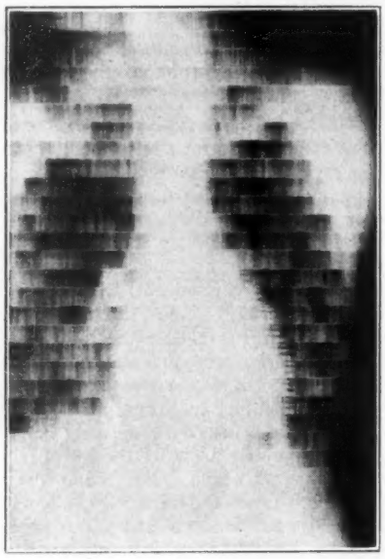

Fig. 3.—Postoperative roentgenkymogram showing practically normal cardiac mobility. There is wide amplitude of pulsation over both ventricular areas. This demonstrates adequate decompression by pericardiectomy. The auricular curves appear normal, and deep aortic waves demonstate increased pulse pressure.

The drainage of the large amount of fluid which forms about the heart after this and other cardiac operations is a serious problem.[11] The absorptive qualities of the mediastinal tissues are uncertain, and enough fluid may collect within a few hours to produce serious compression of the heart. Leaving a drainage tract leading to the surface of the skin carries with it a real hazard of infection. Any one who has seen fluid pumped in and out of such a wound with each respiratory excursion will appreciate the danger. The most satisfactory way out of this dilemma is to leave a generous opening (from 3 to 5 cm.) for drainage into one of the pleurae. During the postoperative period the effusion is removed from the pleura by syringe and needle as indicated. I have been so impressed with the ease and safety of this method of drainage that it has been used by myself and Drs. J. M. Mayer[12] and E. M. Drissen (resident surgeons at Louisville City Hospital) in several heart wounds, with gratifying absence of postoperative cardiac compression and infection. Usually an existing rent in the mediastinal pleura may be enlarged to the proper size.

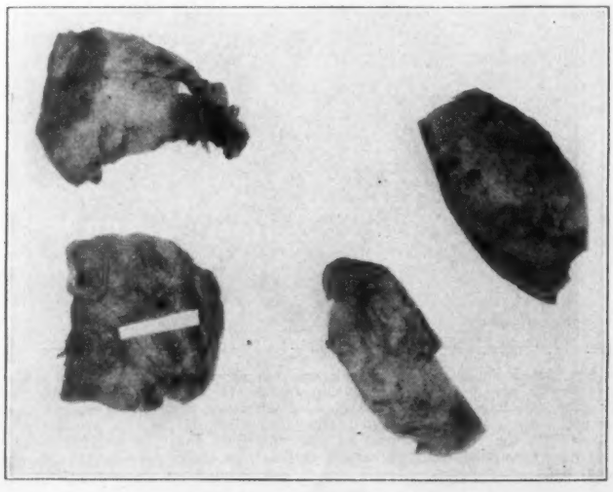

Fig. 4.—Excised segments of pericardial scar.

Postoperative Course.—On account of slight cyanosis, the patient was placed in an oxygen tent for the first few days as a precautionary measure. The pulse was slightly irregular for four days but the rate never exceeded 120 per minute. During the first four days a total of 1,375 cc. of serosanguineous fluid was aspirated from the left pleural cavity. The preoperative cyanosis and distention of the external jugular veins disappeared completely within ten days. The wound healed without drainage or infection. Slight fever (as high as 101.4 F.) about the tenth day was thought to be due to a tender swelling, which appeared in the right supraclavicular region and persisted for about one week. In the light of later observations this probably was thrombosis of the right subclavian vein. The urinary output exceeded the fluid intake on the thirteenth day. No abdominal paracenteses were done after operation, and by the fifteenth day, when the patient was allowed out of bed, the ascites had definitely diminished. Abdominal fluid could not be detected on the eighteenth day and has never recurred. The six foot roentgenogram of the heart showed that the cardiac shadow had increased from 12.4 cm. to 13.5 cm. in width. Postoperative roentgenkymograms (fig. 3) demonstrated clearly the efficacy of the operation that freed the heart from its constricting shell. Ample ventricular excursion was apparent on both sides and the deep aortic curves indicated increased pulse

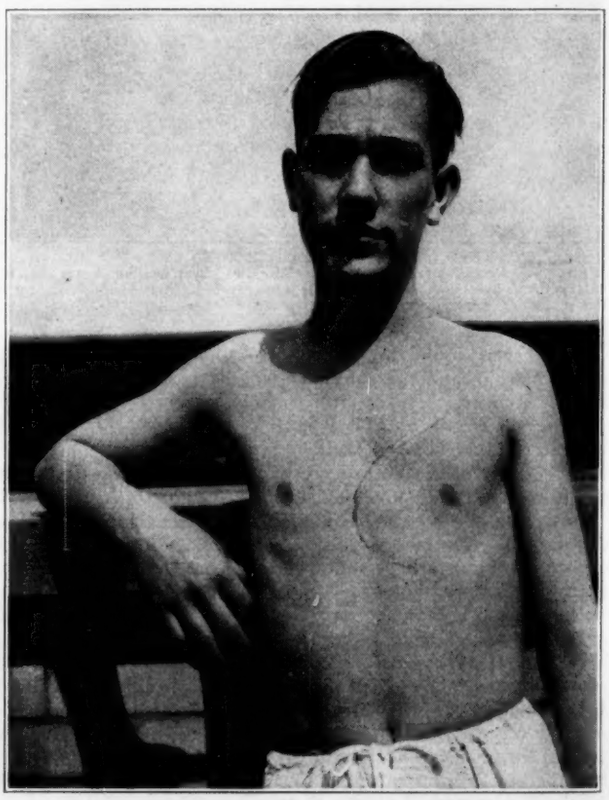

Fig. 5.—Appearance of the patient showing the operative scar.

11. Cutler, E. C., and Beck, C. S.: Surgery of the Heart and Pericardium, Nelson's Loose-Leaf Surgery 4: 265, 1927. Cutler, E. C.: Surgery of the Heart and Pericardium, in Lewis, Dean: Practice of Surgery, Hagerstown, Md., W. F. Prior Company, vol. 4, chapter 13, pp. 26 and 44.

12. Mayer, J. M.: Surg., Gynec. & Obst., to be published.

pressure. Three months after operation, cardiac output determination by the dye injection method showed a minute volume output of 7.90 liters and a stroke volume output of 88.8 cc., more than double the preoperative output. At this time an unduly high (255 mm.) venous pressure reading led to the discovery that there was thrombosis of the veins draining the right upper extremity. Venous pressure in the left arm was 75 mm. of physiologic solution of sodium chloride. The electrocardiogram at this time again showed sufficient change in the shape of the complexes to rule out fixation of the heart in the chest. The QRS complex in lead 1 was small and slightly inverted. Leads 2 and 3 were negative. The pulse rate was 90 per minute and the blood pressure 112 mm. of mercury systolic, 74 diastolic. Six months after operation the pulse rate was 100 per minute, the blood pressure 108 mm. of mercury systolic, 50 diastolic, and the venous pressure 60 mm. of physiologic solution of sodium chloride. Nine months after operation the patient was normal in every way except for slight tachycardia. There had been no recurrence of ascites, dyspnea or other cardiac symptoms and he was working regularly as a tobacco grader.

At present, one year after operation, the patient has returned to his occupation as a jockey and has been training and exercising thoroughbreds for the past two months without cardiac symptoms. This is extremely strenuous exercise.

SUMMARY

1. In a patient with chronic cardiac compression caused by scar (the Pick syndrome) complete relief was obtained by resection of the constricting scar.

2. The roentgenokymogram is of value both as a positive diagnostic measure and as evidence of the efficacy of pericardiectomy.

3. There are advantages of decompression of the heart during the postoperative period by drainage into the pleura.

PONTILE ABSCESS

REPORT OF TWO CASES

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AND
HOWARD ZEITLIN, M.D.
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The occurrence of abscesses in the pons is, like that in the medulla and spinal cord, rare when compared with the incidence of abscesses elsewhere in the central nervous system.[1] Thus, Gowers[2] found among 231 cases of brain abscess only three in the pons, and, according to Cassirer, LeFort and Lehmann[3] found only six cases among 458. Among the forty-five cases of brain abscess in a series of 7,349 necropsies at the Cook County Hospital[4] from Jan. 1, 1929, to July 1, 1935, only two were in the pons. The distribution of the forty-five cases is given in table 1. The etiology of the types present is distinguished in table 2.

The vascular supply and location of the pons probably explain its relative immunity to abscess formation. Since emboli usually enter the brain by way of the carotid arteries, metastatic abscesses can only seldom reach the pons, as the latter gets its blood supply from a different source—the basilar and vertebral arteries. Its location in the posterior cranial fossa removed from the more common sources of cerebral infection (compound skull fractures, sinusitis, otitis, mastoiditis) explains the infrequent spread of infection into the pons.

The clinical picture of pontile abscess is markedly polymorphous. In the majority of cases it is that of hemiplegia alternans inferior. Also known as the Millard-Gubler syndrome, it is characterized by an ipsilateral paralysis of the face and a contralateral hemiplegia. This syndrome denotes a lesion in the basilar portion of the pons. The much rarer type is that of Foville, which was present in our first case.

TABLE 1.—*Distribution of Abscesses in Forty-Five Cases*

Frontal	9
Temporal	11
Parietal	2
Occipital	2
Multiple cerebral	4
Multiple basal ganglions	3
Multiple cerebral and cerebellar	3
Cerebellar	9
Pons	2
	45

TABLE 2.—*Etiology*

Metastatic	16
Secondary to otitis and mastoiditis	13
Secondary to sinusitis	4
Secondary to skull fracture	3
In association with meningitis	4
Of questionable etiology	5
	45

REPORT OF CASES

CASE 1.—*History.*—F. E., a white man, aged 65, admitted to the neurologic ward of the Cook County Hospital, May 8, 1935, complained of headache of two weeks' duration which was so severe that he was forced to go to bed. The day following the onset he noticed that he could not close his right eye and that there was numbness over the left side of the body. Difficulty in speaking and swallowing gradually developed. At the time of admission to the hospital he could no longer walk. He had had gonorrhea and the usual diseases of childhood. He was married; his wife was living and well and he had no children.

Examination.—The patient was fairly well developed and did not appear acutely ill. The temperature was 99.2 F.; the pulse rate was 112 and the respiration rate was 26. The blood pressure was 150 systolic and 90 diastolic. The heart tones were distinct and there were fine crepitant râles throughout the bases of both lungs posteriorly. The abdominal organs were essentially normal. The patient could neither close his right eye nor wrinkle the right side of his forehead. The right nasolabial fold was obliterated. The right pupil was dilated and the right eyeball could not be moved outward. The conjunctiva of the right eye was severely injected and there was an opacity of the cornea. The left eyeball could be moved in all directions and the pupil reacted well to light and in accommodation. The right side of the pharynx was relaxed and the tongue deviated to the right when protruded. There was difficulty in hearing and speaking, with diminution of the sensations of pain and touch over the left arm and leg and the left side of the abdomen. Deep sensibility and the sense of position in the left extremities were intact. There was a marked paresis of the left upper and lower extremities. The deep tendon reflexes were present and equal bilaterally. Babinski and Rossolimo signs were absent.

Laboratory Examination.—Spinal puncture revealed clear fluid under normal pressure. The Pandy reaction was 2+ and there were 8 cells per cubic millimeter. The blood and spinal fluid Wassermann reactions were negative. The urine was normal.

Course.—The patient's condition rapidly grew worse. On attempting to swallow he would choke and fluids would regurgitate through his nose. The cornea of the right eye became

From the Pathology Laboratories, Dr. R. H. Jaffé, director, Cook County Hospital.
From the Division of Neuropathology (Dr. G. B. Hassin), University of Illinois College of Medicine.

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2. Gowers, W. R.: A Manual of Diseases of the Nervous System **2**: 473, 1893.
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more severely inflamed and superficial erosions developed. These were treated by a 1 per cent solution of atropine, which was instilled into the conjunctival sac, and the eye was kept protected with a shield. Crepitant râles developed in both lower pulmonary lobes and by May 14 bronchopneumonia set in. During all this time the condition was so critical that a detailed examination of the sensibility could not be made.

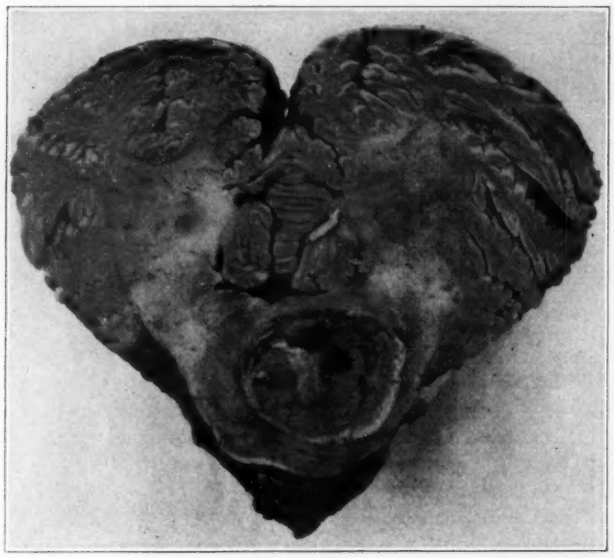

Fig. 1 (case 1).—A pontile abscess of the base with invasion of the tegmentum.

The patient died, May 14, six days after entrance into the hospital and approximately three weeks after the onset of his illness. The diagnosis was some destructive lesion, probably a hemorrhage, in the right side of the pons varolii.

Necropsy (Dr. R. H. Jaffé).—The anatomic diagnosis was abscess in the right side of the pons; confluent bronchopneumonia in all pulmonary lobes; anemia and parenchymatous degeneration of the liver and the kidneys; parenchymatous degeneration and atrophy of the myocardium; hypertrophy of the prostate gland; polyp of the transverse colon; atrophy and infectious softening of the spleen; iridocyclitis of the right eye.

Macroscopic Observations: The essential changes were found in the brain. It weighed 1,550 Gm. The leptomeninges over the cerebral hemispheres were slightly thickened and injected. The vessels at the base of the brain were thin walled and patent. The pons, especially on the right side, was enlarged, very soft and swollen. It measured 5 cm. in transverse diameter and 4 cm. in anteroposterior diameter. In the right brachium pontis there was a 14 by 10 mm. area of light purplish brown discoloration. The brain was sectioned after it had been fixed in a 10 per cent solution of formaldehyde. On the right side of the pons, extending for 7 mm. from the left of the midline there was an oval cavity 25 by 20 mm. in diameter which was filled with thick, light yellowish green pus and was lined by a light purplish brown membrane about 0.5 mm. thick (fig. 1). The lateral ventricles were distinctly dilated and the ependyma was smooth. The cortex and basal ganglions were light purplish brown. Other gross pathologic examinations disclosed that the middle ears and nasal sinuses were not affected and that the right eyelid was closed by dried pus. The cornea was cloudy and the pupil irregular in shape.

Microscopic Observations: The abscess in the region of the pons was separated from the brain parenchyma by a poorly developed young connective tissue capsule. The capsule consisted of three fairly distinct layers (fig. 2). The innermost, adjacent to the pus, was composed of dense masses of gitter cells, the contents of which stained with sudan III. In sections stained by van Gieson's method there were discerned among and above these cells swollen fibrocytes mixed with fine purplish pink stained connective tissue fibers. This layer also contained polymorphonuclear leukocytes and some plasma cells. In the middle layer, the most predominant features were dilated blood vessels and capillaries surrounded by a loose network of swollen fibrocytes, young connective tissue fibers and a few histiocytes, plasma cells and gitter cells. The endothelial cells of the capillaries were swollen. The outer layer, bordering the cerebral parenchyma, was formed by somewhat denser connective tissue fibers and swollen fibrocytes. The latter layer likewise contained numerous plasma cells, macrophages and gitter cells. The lumen of the abscess was filled with débris of degenerated polymorphonuclear leukocytes and small lymphocytes. In Gram-Weigert stained sections, clumps of gram-positive diplococci and short chained streptococci were seen in the necrotic material. The brain parenchyma in the vicinity of the abscess capsule appeared fairly normal, except for the congested blood vessels, which showed a marked proliferation of their adventitial layers and widening of their Virchow-Robin spaces (fig. 2). These spaces were packed with large numbers of plasma cells. The ganglion cells, except for slight evidence of chromatolysis, were unchanged. There were no proliferative or degenerative changes in the glial elements. Perivascular infiltrations were confined to the brain tissue—in the immediate vicinity of the abscess—as the lower medulla oblongata and the brain stem in the region of the cerebral peduncles failed to show such changes.

The subarachnoid space, particularly at the base of the brain, was widened and infiltrated with numerous lymphocytes, plasma cells, macrophages and a few gitter cells (fig. 3). The pial blood vessels were proliferated; their endothelial as well as adventitial cells were prominent. The epineurial and perineurial spaces about the cranial nerves, at the base of the brain, revealed a moderate cellular infiltration. The nerve roots themselves were essentially normal. The choroid plexus contained numerous small calcium concretions but was essentially normal.

A case of tegmental pontile abscess presented a syndrome of the Foville type: paralysis of the sixth and seventh nerves on the right side with contralateral hemiplegia and dissociated hemianesthesia. Of considerable interest was the presence of keratitis on the right side, in addition to the disturbances of sensibility. The Foville syndrome is rare and, as this and other

Fig. 2 (case 1).—The upper half of the section contains the infiltrated blood vessels (*D*) in the brain tissue, which is separated from the abscess (*A*) below by a capsule. *B*, zone of gitter cells; *C*, newly formed capillaries. Van Gieson stain. Reduced from a photomicrograph with a magnification of 100 diameters.

cases show, denotes a tegmental lesion of the pons. Rare as such cases of pontile lesion are, those in which the clinical picture is that of a cerebral involvement, as in case 2, are still rarer.

CASE 2.—*History.*—M. K., a white boy, aged 12 years, admitted to the Children's surgical ward of the Cook County Hospital, July 1, 1932, was in deep coma, and his father stated

that the boy had had a discharging right ear for two and one-half months, severe headache and projectile vomiting for six weeks, paralysis of the left arm and leg for five weeks, and incontinence for three weeks. The complaints dated back to April 14, when the boy noticed a purulent discharge from the right ear. The ear drum was incised and drainage was good for a few days, after which it suddenly stopped. A septic temperature developed (from 101 to 102 F.). In May the right mastoid was operated on but the headaches continued and were accompanied by projectile vomiting. The ear was opened a second time and, June 6, the right temporal region was operated on, as a brain abscess was suspected. The operation did not improve the patient's condition; he was unable to feed himself and in the last week he had difficulty in swallowing.

The past history revealed that the patient had a tonsillectomy and adenoidectomy in 1928 and a radical mastoid operation (on the left side) in 1929.

Examination.—The temperature was 101.8 F., the pulse rate was 94 and the respiration rate 32. A bandage covered the right side of the head. When removed, a linear wound was seen in the right temporal region. The wound was gaping and exuded a yellowish purulent material. Behind the right ear, over the mastoid, was a linear depression 1.5 cm. in depth and 1½ inches (3.8 cm.) in length. The conjunctiva of the right eye was injected, and purulent material was present on the inner canthus. The pupils were equal and reacted to light. A yellowish purulent material exuded from the right ear. There were excoriations and herpes on the lips, and the mouth was filled with thick, greenish white, purulent material. The left side of the chest lagged during respirations; it was dull to percussion, especially in its lower portions posteriorly. The breath sounds were harsh, with numerous moist râles. Examination of the heart and lungs was negative. There was a spastic paralysis of the left arm and leg with exaggeration of the biceps, triceps, patellar and achilles reflexes. There was a positive Babinski sign on the left side.

Laboratory Examination.—A spinal puncture revealed a clear cerebrospinal fluid under normal pressure. The Pandy test was positive and there were 10 lymphocytes per cubic millimeter.

Course.—The child died six and one-half hours after admission.

Necropsy (Dr. R. H. Jaffé).—The anatomic diagnosis was abscess in the right half of the pons extending into the right brachium pontis with marked peripheral inflammatory reaction; edema of the brain and acute internal hydrocephalus; radical operation of the right middle ear; mucopurulent otitis media of the right side; ancient thrombosis of the right lateral sinus of the dura mater; a trephine wound in the right temporal region with exposure of the sylvian fissure; bronchopneumonia in both lower and upper pulmonary lobes; suppurative tracheitis and bronchitis; subacute infectious softening of the spleen; parenchymatous degeneration of the myocardium with dilatation of the left ventricle and endocardial sclerosis, and cloudy swelling of the kidneys.

Macroscopic Observations: The essential changes were found in the head. In the right temporal region was an oval defect 3.5 cm. long and 2 cm. wide. The edges were dry and the floor exposed purplish gray, firm tissue. Behind the right ear was a 3 by 1 cm. surgical wound, extending to the bone. In the region of the defect in the right temporal region the dura mater was exposed and presented a 7 mm. opening. The external surface of the dura about the opening was thickened and fibrotic. The internal surface was smooth. The right temporal lobe was loosely adherent to the dura in this region, and in the right temporal bone there was a 20 by 12 mm. defect which was closed by a thin membrane. The external surface of the dura mater in this region was covered by an adherent, firm, light yellow membrane 4 mm. in thickness.

The right lateral sinus was transformed into a firm, dark purple-red cord. The right middle ear was filled with a yellowish gray mucopurulent material. The left middle ear was unchanged.

The brain was greatly swollen; the leptomeninges were injected and the convolutions flattened. In the right sylvian fissure there was a 10 mm. shallow defect. The right half of the pons was swollen, measuring 5 by 4.5 by 2.5 cm. in diameter. The swelling extended into the right brachium pontis. After having been fixed in formaldehyde the brain was sectioned, and in the region of the base of the pons there was a roughly spherical mass 4 cm. in diameter, containing a semiliquid mucopurulent material. It occupied the greater part of the right side of the pons and extended into the right brachium pontis. It was surrounded by a 1 mm. purple-gray zone.

The ventricles were dilated and filled with an excessive amount of fluid. The brain substance including the basal ganglions was moist and light purple gray.

Microscopic Observations: The abscess in the pons was surrounded by a fairly well developed connective tissue capsule. The innermost layer of the capsule was formed by fibroblasts and histiocytes and was infiltrated with numerous polymorphonuclear leukocytes and gitter cells. The outermost layer bordering on the brain parenchyma was also formed by dense masses of swollen fibroblasts and young connective tissue fibers, among which were many plasma cells and histiocytes. Between the foregoing (external and internal) layers were numerous newly formed capillaries with markedly swollen endothelial cells. Surrounding these capillaries and extending about in

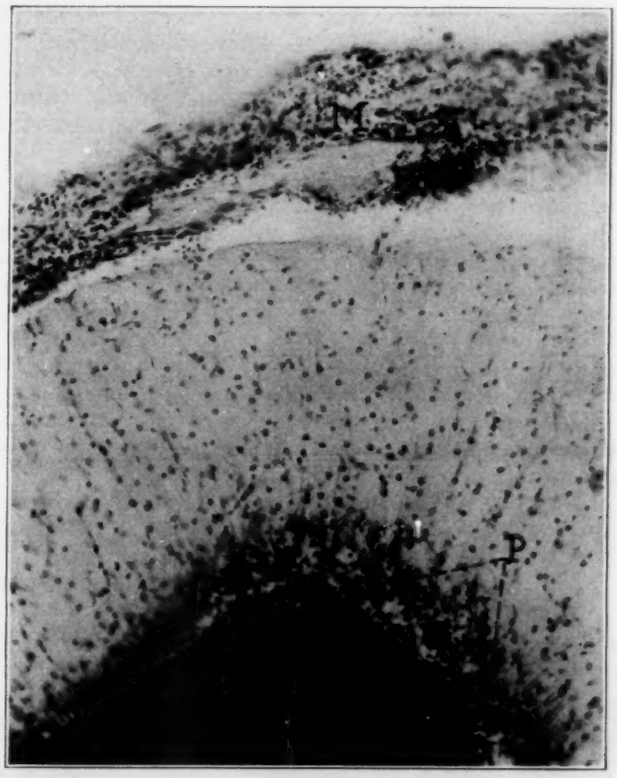

Fig. 3 (case 1).—Aseptic meningitis: *M*, marked infiltrations of the meninges; *P*, Purkinje cells. Toluidine blue satin; × 100.

the form of a loose network were numerous proliferating and swollen fibroblasts, histiocytes and fairly dense accumulations of plasma cells which varied in size. Their cytoplasm was often in the form of an elongated body and occasionally contained two nuclei. Within the abscess were numerous small, homogeneous spherical bodies that stained pale blue with hematoxylin. In addition there were single, well preserved pus cells and histiocytes. The brain tissue about the capsule was loosened and edematous. The Virchow-Robin spaces of the blood vessels were markedly dilated and filled with plasma cells.

The ganglion cells showed slight chromatolysis. The nerve fibers and glial elements showed no abnormal changes.

The right lateral sinus was covered within by a layer of coagulated blood into which young capillaries extended from the wall. The wall itself was unchanged.

Bacterioscopic examination of smears from the pontile abscess revealed numerous degenerated polymorphonuclear leukocytes and much cellular débris in which a few gram-positive cocci were arranged in pairs and in short chains.

This case of pontile abscess thus showed clinically only a contralateral hemiplegia. It so much resembled

a cerebral lesion that the cortex was explored surgically. The location of the abscess in the pons was such that it precluded additional involvement of a cranial nerve, which is so essential in a correct diagnosis of a pontile lesion.

SUMMARY AND COMMENT

In both cases the abscess possessed a young connective tissue capsule and was associated with a nonsuppurative encephalitis in its immediate vicinity, mild degenerative ganglion cell changes and a marked meningitis.

Pathology.—In our cases, the histopathologic changes of the poorly developed capsule surrounding the abscess, together with the changes in the adjacent brain tissue and the reactive phenomena in the subarachnoid space, were very similar to those previously reported by Kölpin,[5] by Diamond and Bassoe[6] and particularly by Hassin.[7] The elements participating in the formation of the capsule were exclusively mesodermal. Although the capsule was immature, its differentiation into three layers was fairly evident. The inner layer was formed by dense swollen fibroblasts, occasional young connective tissue fibers and numerous gitter cells, macrophages, polymorphonuclear leukocytes and plasma cells. The middle layer contained numerous capillaries surrounded by fibroblasts, histiocytes, plasma cells and gitter cells. In the outer layer the fibroblasts were denser, with numerous young connective tissue fibers. Polymorphonuclear leukocytes were absent in the outer layer. The brain tissue about the abscess wall contained numerous blood vessels at a short distance above and below the abscess, their adventitial coats swollen and thickened and their perivascular spaces (Virchow-Robin) markedly infiltrated with plasma cells. The latter changes corresponded with those described as nonsuppurative encephalitis.

The increased cellularity found in the dilated subarachnoid space at the base of the brain is of particular interest and of great clinical significance.

The meningeal reaction following an aseptic irritation as exhibited by the presence of lymphocytes, macrophages, plasma cells and fibroblasts in the subarachnoid space was first termed by Ayer[8] "aseptic meningitis." These changes are also similar to those produced experimentally by Weed[9] and Essick,[10] who injected laked blood and lamp black into the subarachnoid space. Hassin[11] likewise showed similar reactive changes in a case of acute manic state. In our case the presence in the subarachnoid space of gitter cells and the catabolic products in connection with the brain abscess were undoubtedly instrumental in producing these reactive phenomena. The experimental work of Weed, Forster[12] and others as well as the facts from human pathology[13] conclusively proved that the flow of tissue fluid is from the Virchow-Robin spaces to the subarachnoid spaces of the brain and cord. Carrying the gitter cells and waste substances into the subarachnoid space causes a reactive phenomenon in the meninges, which is known as aseptic meningitis.

Clinical and Anatomic Considerations.—Some cases that have been reported in the literature as abscess in the pons were really those of tuberculoma (Abercrombie,[14] Wendt[15] and Tuley[16]). Other cases were metastatic pyogenic abscesses (H. Bercher,[15] Cassirer,[17] Bregman,[18] Pollak[19]) or had an altogether doubtful and indefinite etiology (Forget,[15] Meynert,[15] May,[20] Pitt,[21] Lorenz[22]). Concerning the etiology of the abscess in our first case there are several possibilities, since a detailed history was not available. If the infection of the eye can be considered primary, the abscess can be readily explained as a metastatic lesion. Direct extension from the eye to the pons may have occurred in analogy to the mode of spread of an encephalitic virus to the brain after inoculation[23] into the cornea. On the other hand, the conjunctivitis may have developed when the pontile abscess became large enough to involve first the seventh nerve, making it impossible to close the right eye completely, and later the nucleus of the trigeminal nerve on the right side, producing corneal anesthesia. The latter sequence of events was present in the pontile abscess reported by Cassirer.

The presence of pleocytosis in the cerebrospinal fluid in cases of brain abscess is self explanatory when one considers our discussion about aseptic meningitis. Woltman[24] has utilized the number of cells in the cerebrospinal fluid as an index of the degree of encapsulation (the fewer cells, the more mature the capsule). He also utilized the nature of the cells in determining whether the abscess was in the process of extension or was approaching the meninges or the ventricles. In these two conditions an appreciable number of neutrophilic leukocytes appeared.

A comparison of the cellular reaction in the subarachnoid space in a case of an eight year old abscess, as reported by Hassin,[7] with the cellular reaction in our case (a young abscess) readily illustrates that the number of cells decreases the more localized and encapsulated the abscess is.

CONCLUSIONS

1. Pontile abscesses produce variable clinical pictures, depending on their localization.

2. The direction of the discharge of tissue fluids and toxic products from the region of the abscess into the subarachnoid space was indicated by the reactive phenomena about the perivascular spaces surrounding the abscess—nonsuppurative encephalitis—and the resulting secondary meningeal reactive changes—aseptic meningitis.

1853 West Polk Street.

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TRANSMISSION OF SYPHILIS BY BLOOD TRANSFUSION

A CASE OF ACUTE GUMMATOUS OSTEOMYELITIS

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One of the hazards of blood transfusion is the transmission of syphilis by this procedure. The first known case of syphilis thus acquired was Dade's, reported by Fordyce [1] in 1915. Morgan [2] collected a total of sixteen cases, including one of his own. Jones and his associates [3] recently reported another case of "transfusion syphilis."

Hazen [4] asserts that it is not improbable that 10 per cent of the adult male population of the United States is definitely syphilitic. In view of the wide popularity that blood transfusion enjoys in the practice of medicine today, it is fortunate that syphilis is not transmitted more frequently. This has been explained by Morgan [2] in his recent article: 1. There is considerable evidence [5] to substantiate the view that blood from a donor with inactive (chronic) syphilis fails to transmit the disease to the recipient. 2. Brown and Pearce [6] in experimental syphilis in rabbits have shown that spirochetes are present in the blood during the acute or active phase of the infection. With the disappearance of the active lesions, the spirochetes are no longer present in the blood and the blood loses its capacity to infect. Eberson and Engman [7] have proved that in latent syphilis the reservoir for Spirochaeta pallida is chiefly lymphoid tissue and not the blood. Of the sixteen cases analyzed by Morgan,[2] the status of the syphilitic infection in the donors could be determined in eleven. Of these, ten presented acute primary or secondary syphilis, and the eleventh chronic syphilis complicating pregnancy. The virus has been shown to be present in the blood during pregnancy.

The cases that have been reported of syphilis acquired through the medium of blood transfusion have all shown the picture of a generalized secondary stage of the disease within one to three and one-half months after the transfusion.

The following case of "transfusion syphilis" is of especial interest. The initial manifestation of syphilis was an acute gummatous osteomyelitis. It is the first recorded instance of syphilis so acquired in which no evident secondary stage was present.

From the Medical Service of Dr. A. L. Louria, the Jewish Hospital, Brooklyn.

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REPORT OF CASE

History.—L. S., a white woman, aged 29, admitted to the Jewish Hospital, May 30, 1934, complained of headache of three weeks' duration. She had measles, whooping cough and mumps as a child; the tonsils and adenoids were removed in 1926. Her parents were alive and well and, as far as she knew, her two brothers were in good health. Catamenia was for five days at intervals of twenty-eight days.

She was married in 1931 and became pregnant a year later. Toward the latter months of pregnancy albuminuria, hypertension and headaches developed. Placenta praevia complicated the labor and a stillborn child was delivered by forceps. During her second pregnancy she felt well; albuminuria or hypertension did not develop. At term, after thirty-two hours of labor, a preoperative transfusion was given, and twins were delivered by cesarean section, Feb. 2, 1934. Her brother acted as the donor. Her convalescence was uneventful.

April 1, 1934, eight weeks after delivery, she complained of pain in the chest and both shoulders. The pain became so intense that morphine was required for relief. Within forty-eight hours a tender swelling, the size of an olive, appeared over the middle of the sternum. The pain and swelling continued unchanged for several days and then gradually abated, a residual soreness persisting. Four weeks later (May 1) she complained of intense pain over the entire skull. Within a few days a hard, tender swelling, the size of an olive, appeared on each side of the forehead. Both eyes appeared to be protruding. The tumors and headache persisted for a week and then gradually subsided, leaving a residual soreness. A week before admission (May 23) intense pain preceded by twenty-four hours the appearance of three small nodules, one over the left parietal region and two over the middle of the forehead.

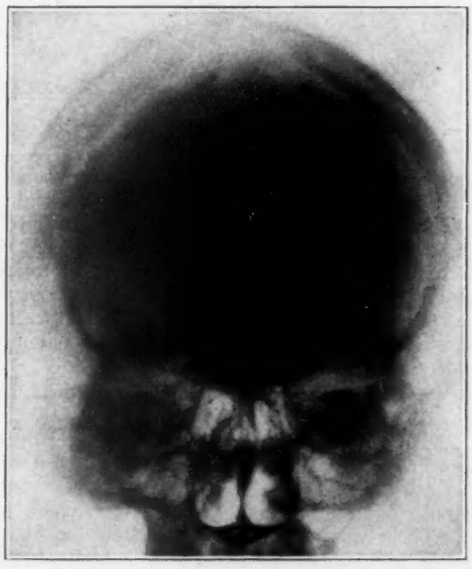

Fig. 1.—Roentgen appearance of skull, showing areas of rarefaction.

The patient positively did not show by symptoms and/or signs of the presence of any antecedent skin or mucous membrane lesions.

Physical Examination.—The patient was of average well proportioned development. Palpation of the skull revealed points of tenderness conforming to her localization of previous swellings. Three small subcutaneous swellings, each the size of a dime (18 mm.), were noted: one on the forehead just above the nose, a second directly above this at the hairline, and a third over the left parietal region. The nodules were well circumscribed, exquisitely tender and soft and appeared to be attached to the underlying bone. The skin over the nodules was not attached. The pupils were equal and reacted to light and in accommodation; consensual reflexes were present. The nasal margin of the right disk was blurred; the left disk was blurred and appeared slightly raised. No hemorrhages or exudates were seen.

The sternum showed a point of tenderness over the lower end of the gladiolus. Palpation of other bones revealed nothing of note.

The heart and lungs were normal. The abdominal organs could not be palpated. Neurologic survey revealed no additional pathologic changes.

The impression was that this case was probably one of gummatous periosteal tumefactions involving the skull and sternum.

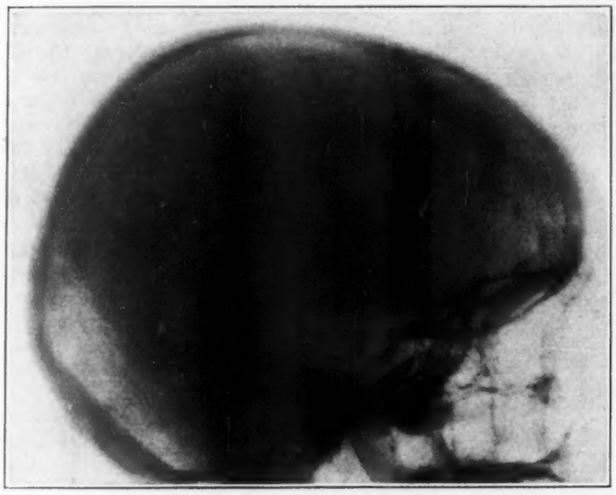

Fig. 2.—Roentgen appearance of skull, showing areas of rarefaction.

Course in the Hospital.—Three days after admission (June 2) the patient complained of intense pain over the right frontal region. The pain was worse the next day, and a swelling the size of a small olive appeared over the right side of the forehead. It was well circumscribed and was attached to the underlying bone, and the skin over it was freely movable. The headache and swelling persisted for five days and then gradually subsided. The temperature and pulse were normal throughout her stay in the hospital.

Laboratory Examinations.—The blood Wassermann and Kahn tests, May 31 and June 2, were four plus.

June 2, 20 cc. of clear spinal fluid was removed under 100 mm. of water pressure. The Queckenstedt test was negative. No cells were noted. Reducing substance was 55 mg. per hundred cubic centimeters. The Wassermann reaction was negative. There was no reduction of colloidal gold. Bacteriologic study gave negative results.

The urine, examined several times, showed no albumin, sugar or pathologic cellular elements. In the concentration test the volume excreted ranged from 130 to 280 cc.; the specific gravity ranged from 1.010 to 1.020. Chemical examination of the blood, June 1, revealed sugar, 117 mg. per hundred cubic centimeters; urea, 11 mg.; creatinine, 1.5 mg.; uric acid, 6.2 mg.; carbon dioxide combining power, 52.6 volumes per cent; calcium, 10.4 mg. per hundred cubic centimeters; phosphorus, 4 mg.

A blood count showed: red blood cells 4,800,000, white blood cells 6,800, with polymorphonuclear leukocytes 54 per cent, lymphocytes 46 per cent, and hemoglobin 65 per cent (Sahli).

The basal metabolic rate was 0.

An electrocardiogram was within normal limits.

Roentgen Examinations.—The cardiac shadow was within normal limits and the aortic shadow was normal. The lungs showed no pathologic changes.

Over the left parietal region of the skull and over the middle of the frontal bone, irregular areas of rarefaction were present. The diagnosis was gummatous infiltration (figs. 1 and 2).

Roentgenograms of the sternum showed an area of rarefaction of the lower end of the gladiolus. The diagnosis was gummatous infiltration (fig. 3). The pelvis showed no pathologic changes, and both the right and left tibias were normal.

Subsequent Course.—Treatment with bismuth compounds, iodides and arsphenamine was instituted in the hospital and was continued by one of us (A. N. S.) after her discharge from the hospital, June 18. A spinal tap was again done October 16; no pathologic changes were noted. The blood Wassermann and Kahn tests were reported negative, Oct. 16, 1934, and plus-minus, Sept. 10, 1935. Roentgen examination on September 11 showed that the areas of rarefaction previously reported had been completely filled in.

Blood Wassermann and Kahn tests were done on the twins and the patient's husband and were reported negative, Aug. 1, 1934, and Sept. 10, 1935. The donor, the patient's brother, was examined as soon as the diagnosis was established. There was no evidence of primary or secondary syphilis. Blood Wassermann and Kahn tests were reported four plus on June 20, 1934, and Sept. 10, 1935.

COMMENT

The patient was intelligent and cooperative. She was positive in her assertion that neither symptoms nor signs suggestive of secondary syphilis preceded the onset of her illness, nor could she recall anything pertinent in her past history. It is an accepted fact that latent syphilis can be reactivated by pregnancy. Schamberg and Wright [8] state that every woman who has had active syphilis before or during pregnancy, and who has received no treatment or inadequate treatment, is liable to give birth to a syphilitic child, infection taking place through the placenta. Almkvist [9] reports that in twenty-seven of twenty-eight infants born to syphilitic mothers, the disease became manifest in from fifteen days to eight months after birth. Thus the absence of signs of syphilis in the twins and the negative Wassermann reactions on their blood may be interpreted as evidence that the disease was not present in the mother during her pregnancy.

The patient's brother, who had acted as donor, admitted that he was exposed to syphilis in 1930, when he had been living with a woman who had syphilis. A Wassermann test was done at that time and was reported negative. He stated that there had not been any primary or secondary manifestations of syphilis. He was examined immediately after the diagnosis was established (June 1934) and several times later, and no lesions indicative of syphilis were discernible. Blood Wassermann and Kahn tests were reported positive, June 20, 1934, and Sept. 10, 1935.

Fig. 3.—Roentgenogram of sternum, showing an area of rarefaction of the lower end of the gladiolus.

Syphilis of the bone may occur early as well as late in the disease. According to Schamberg and Wright [8] the spirochete early in the course of syphilis tends to invade the bone marrow. The specific gummatous foci appear most frequently in the periosteum.[10] The gummatous overgrowth follows the vessels as they enter the skull into the bones from the periosteum. When the bone is involved as well as the periosteum, Kaufmann describes the lesion as "acute gummatous osteomyelitis." The

8. Schamberg, J. F., and Wright, C. S.: Treatment of Syphilis, New York, D. Appleton & Co., 1932.
9. Almkvist, J.: Prophylaxis of Congenital Syphilis, Acta dermat. 5: 303-348, 1924.
10. Kaufmann, Edward: Pathology, Philadelphia, P. Blakiston's Son & Co., 1929.

roof of the skull, the sternum, the phalanges and the tibias are most frequently involved.

This patient thus represents a case in which acute gummatous osteomyelitis was the initial lesion of syphilis transmitted by a blood transfusion.

SUMMARY

1. In a case of acute gummatous osteomyelitis, syphilis was acquired through the medium of a blood transfusion. There was no evidence of the secondary manifestations of syphilis.

2. The blood donor was not in the active phase of syphilis at the time of the transfusion, nor has he subsequently shown active lesions. Blood Wassermann and Kahn tests have repeatedly been reported positive.

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COCCIC INFECTIONS OF THE RENAL CORTEX

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It is surprisingly strange how slowly the medical profession is coming to appreciate the importance of cortical kidney infection due to the various types of cocci, as well as the various clinical pictures of this condition and its very definite relation to perinephritis, to perinephric abscess and probably to chronic sclerosing perinephritis. In this paper I shall analyze some of my observations, which I have attempted to describe in part previously and which corroborate much that is scattered here and there in the literature.

Though the clinical picture presented by these cortical coccic infections in previously normal kidneys may vary from the most acute disease to a more or less chronic one, usually the diagnosis can be made and proper therapy instituted before irreparable harm to the kidney or to the patient is done. There is a distinct and definite difference between these cases and the bacillary infections: colon, proteus, pyocyaneus, Friedländer, and so on.[1] Pyuria is a characteristic of these cases, while in the coccic cortical abscesses the urine is usually clear. In the literature, unfortunately, the two types are frequently combined and described together, making for great confusion. Rarely coccic infections and bacillary infections occur together and make the diagnosis much more difficult. However, such cortical infection, whether coccic or bacillary, is usually superimposed on a previously diseased kidney, infected hydronephrosis, pyonephrosis or calculous pyelonephritis and more rarely on tuberculosis and on polycystic or neoplastic disease. This type of cortical abscess, as opposed to the metastatic coccic abscesses in previously healthy kidneys, only occasionally leads to suppuration in the so-called perinephrium.

It seems to me that too much emphasis has been placed on the peracute, fulminating, unilateral, septic, hematogenous infections,[2] which in my experience have been encountered infrequently compared with the acute, embolic abscesses, which also are often associated with positive blood cultures. The former group are often a part of a general, overwhelming sepsis and though the symptoms may be unilateral, both kidneys, the lungs and other organs frequently show embolic abscesses. If symptoms and signs are limited to one side, early removal of the diseased kidney may effect a cure, whereas in the other group primary nephrectomy is rarely indicated. At the opposite end of the scale, there may be a mild and very transitory group with fever, pain and tenderness lasting a short time, in which cocci have been found on smears from the centrifugated urine (Crabtree,[3] Cabot,[4] Nesbit[5]). These cases are still *sub judice* and may belong to the group of nonsuppurating, diffuse staphylococcic nephritis. "Almost all patients recover, usually undiagnosed."[6] Between these two extremes there is a large group of cases of cortical abscess and cortical carbuncle, which rarely get well without incision, drainage and decapsulation or nephrectomy, and which underlie almost all cases of perinephritic suppuration.

Cortical abscess of coccic origin, not caused by direct injury, is always secondary[7] or perhaps tertiary to a focus of infection or abrasion, perhaps weeks or months earlier and often forgotten by the patient. The infection may be in the skin (furuncle, abscess, carbuncle, paronychia, infected wounds, abscess of prostate or testes, erysipelas) or a gum boil or infected tooth and rarely to a systemic infection without or with evident skin suppuration. It may also be due to subacute or chronic osteomyelitis or to an infection of the upper respiratory tract, including tonsillitis.

There has always been a certain amount of mystery as to how the coccic emboli or the microscopic mass of cocci arrive at the kidney and lodge in the small end arteries. Whether they traverse a patent foramen ovale (a not uncommon anatomic defect) and thus reach the left side of the heart or whether they are small enough to traverse the pulmonary capillaries has always been conjectural. The only thing that is certain from clinical observation is that the coccic emboli finally reach the kidney destination.

Within recent years a publication from the Hamburg Pathologic Institute, read before the local society but as yet unconfirmed as far as I know, claims that, in all these cases of transitory or protracted sepsis with bacteremia, almost regularly a thrombophlebitis was demonstrable in the pulmonary circuit and that from these secondary foci tertiary foci develop in other parts. If this conception is verified, patients with cortical kidney abscesses that are adequately drained and still maintain a bacteremia may in turn, as the pulmonary thrombophlebitis takes care of itself, lead to further or quarternary metastases due to a thrombophlebitis in one of the cortical veins or to a thrombophlebitis in the main renal vein. It would seem, therefore, that the routes of the infecting agent may be rather difficult and involved. If the embolus lodges in the glomerular vessels or in one of the terminal branches of the arteries under the capsule, one or more localized abscesses are liable to develop. Apparently this process may be peracute or subacute, depending on the virulence of the organism and the patient's ability to combat the invader. In other cases, if the embolus lodges in a vessel well below the cortex at a bifurcation, a definite infarction develops, involving a typical conical area of cortex, which is liable to break down if the suppuration is not controlled and lead to innumerable small abscesses in the infarcted area, thus producing the picture of

Read before the North Central Branch of the American Urological Association, Rochester, Minn., Oct. 31, 1935.

1. Beer, Edwin: Ann. Surg. **66**: 249, 1917; **75**: 760, 1922.
2. Brewer, G.: Yale M. J. **17**, 1911.
3. Crabtree, E. G.: Surg., Gynec. & Obst. **22**: 221 (Feb.) 1916.
4. Cabot, Hugh: Surg., Gynec. & Obst. **23**: 495 (Nov.) 1916.
5. Nesbit, R. M.: Acute Staphylococcal Infections of the Kidney, J. A. M. A. **98**: 709 (Feb. 27) 1932.
6. Hinman, Frank: Principles and Practice of Urology, Philadelphia, W. B. Saunders Company, 1935, p. 571.
7. In the first series, thirty-four out of sixty-one cases; in the second series thirty-two out of forty-three cases, according to the patients' histories.

carbuncle of the kidney. There can be no doubt from innumerable observations that many of the former group of cases may resolve, even without perforation, into the caliceal system, as one frequently sees evidence at operation of such a process, particularly in the consolidated perinephritic fat. On the other hand, it is

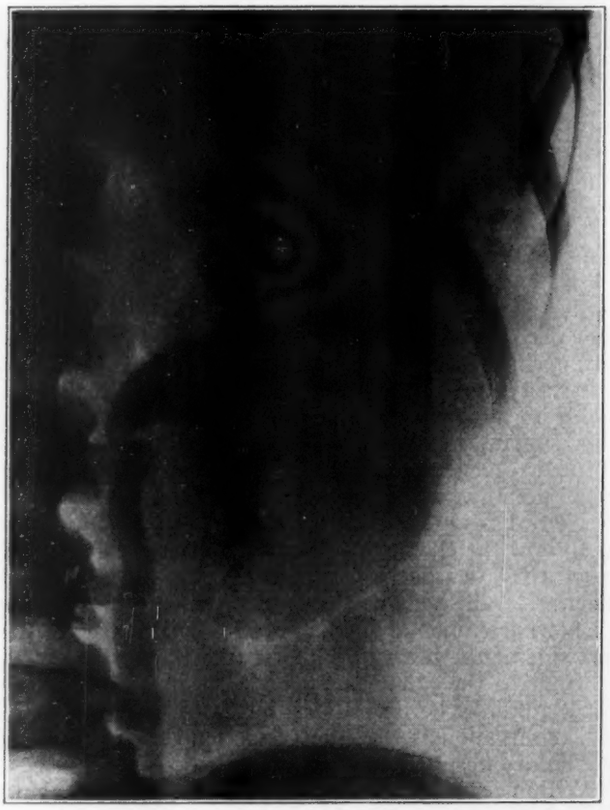

Fig. 1.—Cortical abscess of anterior surface; curvature of the spine. Excretory urogram shows separation between second and third calices, irregular contour of kidney cortex, obliteration of the psoas. W. M., aged 13 years. Two weeks right lower quadrant pain. No pus in urine preoperatively. Operation revealed cortical abscess of anterior surface, subcapsular abscess, Staphylococcus aureus on culture. Negative blood culture and urine culture.

much less common and probably rarely seen in the carbuncular involvement of the kidney.

In my experience the great majority of both these types of kidney infection has been progressive and has finally led to involvement of the perinephric fat. If such cortical foci remain under the fibrous capsule of the kidney, as has been repeatedly seen in my cases, the perinephric fat is liable to be edematous, at times adherent to the fibrous capsule over the abscess, and may even go on to frank suppuration, infected through the lymphatics or blood vessels which, though few in number, seem to connect the kidney cortex and capsule with the perinephric fat. If, on the other hand, such a cortical abscess is seen in the latter stage, it may have perforated the capsule of the kidney, as it usually does, and present a frank, massive contamination with suppuration in the perinephrium. A great deal of confusion has been caused in the interpretation of this pathologic process and in the origin of perinephric abscess by virtue of the fact that at operation in advanced cases of perinephric suppuration one may not recognize any evidence of kidney involvement. The cortical abscess, having ruptured and drained into the perinephric space, rapidly heals so that what was a cavity in the cortex fills in with granulation tissue and on palpation the original crater or abscess cavity is flush with the adjacent kidney cortex and not recognizable to the palpating finger.

I have been able to see, in the many operations for this condition, every stage of the pathologic process; e. g., cases in which the perinephric tissue was edematous only because of an underlying cortical abscess or abscesses, in which these cortical abscesses were uncovered only by decapsulating the kidney in situ, other cases in which a large perinephric abscess had developed and communicated with a definite crater or abscess in the kidney cortex, and others again in which there was no visible or palpable evidence of cortical abscess underlying the perinephric abscess. This last group of cases usually are of long standing and were more common when surgical therapy was delayed. Since earlier recognition of these cases, the last group has been rarely seen. In fact, in my last twenty cases decapsulation demonstrated the cortical kidney abscess in seventeen cases. In other cases the typical crater of the cortical abscess, which had perforated the capsule, was readily palpated. In other cases a superficial area of granulating tissue flush with the surface of the convexity of the kidney was all that was left to indicate the origin of the perinephric abscess. Untreated these perinephric abscesses, as is well known, may rupture into the paranephric space and thus drain down along the lumbar gutter toward the pelvis, appearing at the various rings in the inguinal region. They may perforate upward into the subdiaphragmatic space and thus into the pleura, or anteriorly into the bowel or perito-

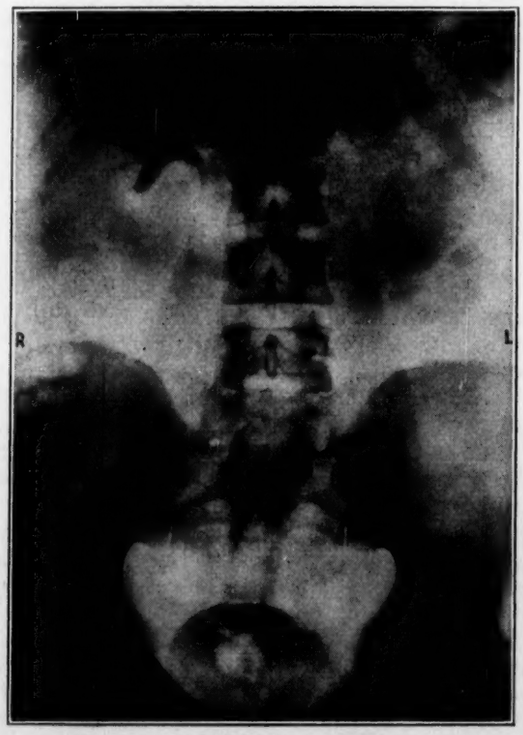

Fig. 2.—Anterior cortical abscess. Pyelogram showing pushing apart of upper and second calices. S. F., aged 32. Four months, furunculosis of lumbosacral region. One month, chills and fever. No blood culture or urine culture. Physical examination showed tenderness over McBurney's point. At operation, slightest edema lower pole. After decapsulation, anterior surface abscess found; rest of kidney normal. Cultures of pus showed Staphylococcus aureus.

neum or posteriorly through the musculature under the skin in the lumbar region. Fortunately these extensive abscesses in the perinephric fat are rarely seen nowadays, though they were common thirty years ago. It must be admitted that involvement of the perinephric

fat may also arise from intrinsic disease of the kidney and pelvis, as seen in pyonephrosis, stones in the kidney, tuberculosis and the like, but in these conditions the underlying disease usually dominates the picture and this type of complication is relatively rare.

Perforations of the bowel and appendix, as well as suppuration in the female pelvis and vertebral suppuration, may lead to such abscesses in the paranephric fat and perhaps also in the perinephric fat. This surely is a comparatively rare occurrence and it is difficult to understand the statement by Ombrédanne [8] that perinephric abscess in children is usually the result of appendicitis. Gerota's fascia is probably rarely penetrated by these abscesses, which lie behind this fascial plane in more or less direct communication with the retroperitoneal space.

The perinephric fat is undoubtedly in intimate lymphatic and vascular contact with the kidney and it is claimed that there is a separate arterial supply derived from the renal artery which goes to the perinephrium ("twigs," Quain). In view of this anatomic relation, a number of recent writers (Vermooten,[9] Bugbee [10]) have reemphasized the possibility and probable frequency of perinephric suppuration produced by embolic infection of the perinephric fat. It is well known that the perinephric fat is remarkably avascular, despite this possible blood supply, and operating room observations have shown that this method of infection of the perinephric fat leading to suppuration must be a great rarity, as emphasized in years past by such experienced surgeons as Israel [11] and Jordan [12] and by many others, as well as by my own extensive experience.[13] While it cannot be denied, in view of the anatomic studies, that there is a possibility of such an infection of the perinephrium, the evidence of this method of infection is to date no more than flimsy.

In view of the pathologic condition as just described and the frequent suppuration in the perinephric fat associated with cortical kidney abscess in previously healthy kidneys, the bacteriology of the pus in both the cortical abscess and the perinephric tissue almost regularly shows the same organism; namely, Staphylococcus aureus. Occasionally, in a few of the cases, the streptococcus has been isolated, and in a few rare cases Staphylococcus albus. In one case in which the latter organism was isolated, it was isolated also in the blood stream and caused the patient's death. In cortical abscess and perinephric abscess in previously diseased kidneys, on the other hand, Staphylococcus aureus has been an unusual finding, whereas colon bacilli, proteus, pyocyaneus, the Friedländer bacillus and lactis-aerogenes have been identified. Usually the same organism has been identified in the voided urine, and at times, when cystoscopy and ureteral catheterization have been carried out, these bacilli have been found only on the side of definite disease. The culture from the urine in typical coccic cortical infections in previously healthy kidneys may fail to demonstrate Staphylococcus aureus. In twenty-eight cases so studied in my second series, eleven gave positive results. In some of these cases, colon bacilli seem to overgrow the cocci. There has been no systematic attempt made to examine the smears of the centrifugated urine from the diseased kidney, reliance having been placed mainly on cultural examinations. In a considerable number of these cases, blood cultures have been made and Staphylococcus aureus or Streptococcus anhaemolyticus and haemolyticus have been grown. In the bacillary cases there have also been repeatedly positive blood cultures. In both groups of blood cultures, invasion of the blood stream is usually temporary, and despite positive blood cultures, if proper treatment is carried out the sepsis disappears and the blood stream becomes sterile.

8. Ombrédanne, Louis: Chirurgie infantile, Paris, Masson & Cie, 1923.
9. Vermooten, V. D.: J. Urol. **30**: 181 (Aug.) 1933.
10. Bugbee, H. G.: Am. J. Surg. **26**: 255 (Nov.) 1934.
11. Israel: Nieren Krankheiten, Berlin, August Hirschwald, 1901, p. 580; Chirurgie der Niere und des Harnleiters, Leipzig, Georg Thieme, 1925, p. 186.
12. Jordan: XXVIII Kongress Deutschen Gesellschaft für Chirurgie, Zentralbl. f. Chir., 1899, p. 152.
13. Beer, Edwin, and Hyman, Abraham: Diseases of the Urinary Tract in Children, New York, Paul B. Hoeber, Inc., 1930, p. 63.

REVIEW OF SIXTY-ONE CASES

The following observations are based on a review of sixty-one cases treated prior to 1926 and reported by Dr. Paul Aschner,[14] and forty-three more recent cases in which operation was performed.[15] In this last group, some new points of view have been developed, while in general most of the fundamental observations in our service, as published by Aschner, have been confirmed. Males, as is to be expected, are more frequently involved (thirty-one to twelve), and the majority of cases fall between the ages of 20 and 50. In forty-three cases, thirty-eight showed Staphylococcus aureus in cultures of pus, three showing a mixed infection. In thirty-two cases there were perinephritis and perinephric abscess, as well as cortical abscesses. In nine cases the kidney was not exposed or visualized according to the records. In thirteen cases the cortical abscess was anterenal. If this location of the abscess, almost 30 per cent of the last forty-three carefully observed patients, holds for other series, one can well understand

Fig. 3.—Anterior cortical kidney abscess. Excretory urogram, middle calices not filled. S. C., aged 48. Nine days, symptoms, left upper quadrant, left loin pain. Etiologic factor hemorrhoidectomy two months previously; required catheterization after operation; resulted in nocturia, frequency, no pus in urine. Two positive blood cultures, Staphylococcus aureus, Staphylococcus albus, Streptococcus haemolyticus. Operation showed cortical abscesses, anterior surface, perinephritis, edematous fat. Uneventful recovery.

14. Aschner, P. W.: Am. J. M. Sc. **172**: 63 (July) 1926.
15. In addition there were five patients who presented rather typical symptoms and got well without surgery, as well as two patients who died too toxic for surgery.

the failure to appreciate the intimate relationship between the cortical kidney suppuration and perinephric abscess. Without decapsulation, these abscesses would have been regularly missed. Incision and drainage alone of the perinephric abscess possibly would have sacrificed the involved kidney, surely protracted the convalescence and perhaps even have lost the patient. In a study of the blood cultures, there were seven staphylococcemias out of a total of twenty-six studied in this manner. Only a fraction of the cases were studied from this standpoint, and usually only the very sick or persistent and puzzling cases.

The clinical picture of metastatic, cortical, coccic infection has become much clearer since physicians and surgeons have been on the lookout for these cases. As Linder [16] has recently written, the general surgeon sees more of these cases than the urologist, as they are referred to the general surgeon by the medical men

Fig. 4.—Excretory urogram showing good function of both kidneys. Diffuse shadow in left lumbar region, obliterating margin of psoas muscle and curvature of spine toward the opposite side, where psoas margin is clearly seen. S. M., aged 16 years. Antecedent skin infection, cortical abscess of left kidney, edema of perinephric fat.

under the impression that they are acute, abdominal conditions. In fact, it has been my experience as a general surgeon that the urologist often fails to recognize this condition, probably owing to lack of extensive experience. During recent years particularly, the clinical picture of these cases, coming as they do to the surgeon earlier, is totally different from what it was some thirty years ago, when these patients presented themselves with bulging, tender, lumbar abscesses, often associated with psoas contractions, simulating either Pott's disease of the spine or hip disease. At the beginning of the century the orthopedic surgeon frequently described the end result of these cases, as they were referred to him for the foregoing symptoms, before the correct diagnosis was made. Some few cases still present a picture that is quite baffling, and only a tentative diagnosis, followed by an exploratory operation, helps to clarify the underlying pathologic condition.[17]

As the clinical picture may vary from a very acute, fulminating process with chill or chills, high temperature and pain in the back to that of a subacute or chronic septic condition, it is fair to say that the clinical picture presented by this type of infection may be protean in character. Fortunately in the great majority of cases the picture is rather typical and therefore easily recognized. In the minority of cases the obscure picture and the bizarre behavior of the patient had led to many late diagnoses, in some cases a year or more following the beginning of the infection. It can readily be understood why the picture varies. In all probability this depends not only on the degree of virulence of Staphylococcus aureus and the resistance of the patient but also on the local pathologic condition and the progress of the disease. While the pus focus is under the kidney fibrous capsule and therefore under considerable tension, the symptoms may be marked and striking, and as the cortical abscess ruptures into the perinephrium and in turn localizes in this fatty tissue, symptoms may subside temporarily, only to become more definite as tension develops in the perinephric space. Again, when the perinephric abscess breaks through the fascia of Gerota, tension disappears and many of the symptoms temporarily abate. Then again as pus ruptures downward and descends between the two leaves of Gerota's fascia toward the pelvis, the symptoms may subside until the tissue reaction reencloses the purulent accumulation. Some few cases may rupture into the caliceal system or the pelvis and drain off satisfactorily, with disappearance of symptoms.

In view of these peculiar developments, one often gets the impression that the patient is definitely getting well spontaneously, which may take place, but innumerable cases of this sort have been seen by other observers, as well as by myself, in which finally, despite apparent repeated periods of convalescence and improvement, operation became necessary and disclosed in addition to the perinephric abscess further change, either a cortical abscess or carbuncle of the corresponding kidney.

The characteristic symptoms of this disease are a rise in temperature with or without chill, with pain in one or both lumbar regions. On physical examination the kidney usually cannot be felt, and if palpable, strange to say, it may be movable. There is regularly a definite jar or "punch" tenderness over the involved kidney. If the elevation of temperature continues, there is a progressive, often impressive, loss of weight and a progressive anemia. The patient becomes pasty looking and suggests sepsis. Leukocytosis is almost always present while the patient has fever. The examination of the urine at this stage may show little or nothing. There may be some red blood cells [20] in the voided urine, some leukocytes or a trace of albumin, as a result of the febrile reaction, possibly from the affected kidney, possibly from the second kidney. In view of the fact that the cortex is involved in these cases, it is not surprising that the urine is clear and practically negative macroscopically and microscopically. Moreover, the functional tests of the kidney and the blood

16. Linder, W.: Am. J. Surg. **6**: 175 (Feb.) 1929.

17. Though the clinical picture may seem clear and typical, exploration may expose a paranephric abscess due to vertebral osteomyelitis, metastatic psoas abscess, pericholecystic abscess, pericolonic suppuration due to carcinoma and the like, very rarely a subcapsular hemorrhage caused by periarteritis nodosa (Dantes,[18] Wever [19]) and occasionally no pathologic condition at all.

18. Dantes: J. Mount Sinai Hospital New York **2**: 130, 1935.

19. Wever, G. K., and Perry, Isabella H.: Periarteritis Nodosa, J. A. M. A. **104**: 1390 (April 20) 1935.

20. Gross hematuria is unusual.

examination for retention products are liable to be negative. Cystoscopy in these cases should be carried out only after a preliminary roentgen examination. The chief value of cystoscopy is to demonstrate that both ureters are patent and that the patient is not suffering from a completely blocked kidney. In practically all these cases at their inception it is essential to rule out an acute, infected, completely obstructed hydronephrosis.

The roentgen examination, as pointed out by a number of writers (B. Alexander,[21] B. Revecz,[21] H. Laurell,[21] J. R. Carty,[21] L. Friedman,[21] P. Lipsett[21]), in the flat plate may frequently help clarify the diagnosis by demonstrating a curvature of the spine away from the area of pain and tenderness and a partial or complete obliteration of the sharp edge of the corresponding psoas muscle. In eighteen cases out of twenty-nine these corroborative signs were noted.

In 1928 I [22] called attention to the fact that obliteration of the psoas margin and curvature of the spine away from the painful or tender kidney in the absence of an obstruction of the ureter leading to hydronephrosis and in the presence of macroscopically clear urine was a corroborative sign of perinephric suppuration. Since then I have noticed this sign repeatedly in cortical kidney abscess without frank perinephric suppuration, caused in part by edema in the perinephric fat. This analysis of the situation presented in the ordinary flat x-ray plate places the value of such an examination on a much firmer basis than do the observations of other writers.

It is amusing to see cases reported with flat roentgenograms in which the legend reads "There is no curvature of the spine away from the involved kidney," when even in the reproduction it takes no particular keenness to recognize such a curvature. As similar pictures may be induced by an obstructed, infected hydronephrosis, a cystoscopy is essential to exclude this condition. In some obscure cases the flat roentgenograms of the kidney area may show a gradual enlargement of the kidney shadow, which in the absence of an obstruction in the ureter can only mean that while under observation the kidney has been gradually more and more involved, producing an increased shadow. Occasionally in the roentgenogram one may see an irregularity or hump corresponding to a suppurative process either under the capsule or in the perinephrium, which also may help in the more chronic cases in elucidating the clinical picture. Actual displacements of the kidney have been described, but they must be very rare. Some authors believe that they can diagnose cortical abscesses by variations in the density of the kidney shadow, which is more than I have been able to do.

Excretory urography and retrograde pyelograms have repeatedly helped out in the diagnosis of some of the subacute and chronic cases by demonstrating either a pushing apart of the calices above and below the abscess or by demonstrating, particularly in the carbuncular cases, compression phenomena involving the pelvis and two or more calices simulating neoplasm of the kidney (ten cases out of sixteen). These changes in the roentgenograms are seen not infrequently in cortical abscess, even before frank pus develops in the perinephric space. Another x-ray observation, especially in upper pole involvement, is a gradual pushing up of the diaphragm or fixation of the diaphragm due to local edema or exudate. All in all, the value of the roentgen examination in these cases has been very much underestimated, as evidence of trouble is demonstrable in this way in more than half the cases.

In a moderate number of cases there may be radiating pain along the genitocrural nerve and some mild urinary frequency. Rarely there are colicky pains. Many cases at the inception present no symptoms or definite signs referable to renal disorders and resemble general infections, such as influenza, typhoid or even sepsis; some suggest pneumonia, and others in which there is pain on respiration are mistaken for pleurisy. If the cortical abscess is in the upper pole, the latter clinical pictures are readily simulated.

In some of the subacute or chronic cases in which the temperature has gradually dropped, and in which local pain and tenderness have disappeared, I observed some years ago that it might be possible to activate the quiescent abscess with the use of ordinary Staphylococcus aureus vaccine. This procedure was based on clinical observation of cases of bilateral cortical abscess in which the patient at the time of the first operation had symptoms localized to one side and shortly thereafter developed symptoms referable to the second kidney. At the exposure of the second kidney, the same pathologic condition that had been disclosed at the first operation was found. Apparently the condition had existed the same length of time, and the absorption following the first operation had activated the foci in the second kidney. A number of cases in which vaccination with stock vaccine of Staphylococcus aureus has been carried out seemed to respond with fever, pain and development of local tenderness. In view of the fact that this did not happen regularly, it is only fair to say that the apparent activation may have been accidental, though it seemed to be a direct result of the injection. I believe that in obscure cases this should be attempted. Intercurrent infections of the upper respiratory tract, as well as skin infections, may also reactivate quiescent coccic foci in the kidney, which supports the foregoing observations.

The clinical pictures of the typical, acute cases, whether associated with bacteremia or not, should be recognized and should be treated surgically by incision, drainage and decapsulation [23] in situ. If this is carried out, the wound should not be sewed tightly, as it is always liable to be infected from the staphylococcus pus. Adequate rubber dam in front and behind the decapsulated kidney should be left in place for drainage and usually, if the abscesses are thoroughly drained and do not involve the whole kidney, decapsulation is curative. Only two cases eventually required nephrectomy. Whereas with a clear cut clinical picture—persisting fever, jar tenderness—operation is indicated, should the symptoms abate and suggest spontaneous resolution, a watchful waiting policy is indicated.

Variations in the clinical picture from the simple, more or less regular course, deserve special mention, and I shall take the liberty of describing a number of obscure cases rather fully to illustrate the perplexity that can be produced by this type of metastatic, cortical, coccic kidney abscess. Before describing these unusual cases, it must be emphasized that there is a considerable group of cortical abscesses which involve the anterior surface of the kidney (thirteen cases out of forty-three), which may eventually rupture into the anterior perinephric space and thence rarely into the peritoneal cavity, and which appear as acute abdominal disease, often suggesting either a gallbladder infection, appendi-

21. Cited by Beer and Hyman,[22] pp. 63-84.
22. Beer, Edwin: Roentgenographic Evidence of Perinephritic Abscess, J. A. M. A. **90**: 1375 (April 28) 1928.

23. In very long standing, neglected cases of perinephric abscess, in which the kidney is thoroughly bound down and encased, decapsulation in situ may be unwise, unnecessary or even impossible.

citis, acute pancreatitis, occasionally liver abscesses or even a visceral perforation. Sometimes lower pole cortical abscesses will produce the same type of irritation of the peritoneum, and, if on the patient's right side, the aforementioned clinical pictures may be simulated. On the left side, fortunately, this confusion is rare, though at times anterenal suppuration has led to the mistaken diagnosis of a colonic tumor, which may have to be excluded by a barium sulfate enema. These cases of anterenal suppuration, of which numerous examples have been described by me and members of my staff in years past, naturally are referred to the general surgeon rather than to the urologist. Both groups, if not aware of the clinical entity, are liable to be confused and approach the disease transperitoneally. Such cases are presented with unusual frequency at medical societies, and a recent case presented by Cutler [24] shows very clearly how serious a condition can develop from a misinterpretation of the clinical picture. Such abscesses on the anterior surface of the kidney, drained transperitoneally, invite all sorts of trouble in addition to peritonitis and may require reoperation through the lumbar route for adequate drainage of the cortical and perinephric focus. On the other hand, if the condition is recognized, as it should be, a typical lumbar incision with decapsulation and drainage of the cortical abscess rapidly leads to cure.

The importance of leaving these wounds fairly wide open is to be emphasized, as every once in a while one must digitally explore the wound and sweep one's finger around the involved kidney to control any possible retention or to break into any new subcortical abscesses that may have come to the surface. Although usually after the primary decapsulation and incision of these abscesses the postoperative course is uneventful, at times retention with elevation of temperature takes place and the procedure can be readily carried out in bed with complete evacuation of the abscess and rapid improvement in the patient's general condition. In some of these cases, when a large vessel has been obstructed and an infarction has developed producing a carbuncle, it frequently is possible somewhere around the third week of the disease to enucleate the infected wedge with a blunt instrument or even with the gloved finger. About this time separation from the normal kidney parenchyma seems to take place. The enucleation of the infarcted area the first time it is seen or carried out is a surprise, as well as a satisfaction to the surgeon. Usually very little bleeding takes place and a small iodoform packing for the purpose of drainage is introduced into the cavity thus produced.

In treating all these cases, the surgeon has to use his judgment as to whether decapsulation will suffice to cure the patient. In my experience decapsulation [25] almost invariably has led to a complete cure, except when extensive, multiple carbuncles or innumerable abscesses were present, and even here, if the patient's condition will permit, a decapsulation with incision of the abscesses or with enucleation should be done as the first step. If the kidney is riddled with abscesses, decapsulation may be ineffectual; but a secondary nephrectomy, if it should be necessary, can readily be done, as the kidney lies free in the bottom of the wound and can easily be delivered and its pedicle tied off. (Two cases out of forty-three required nephrectomy.)

In closing this paper I will describe a few of the unusual cases referred to so as to call attention to some of the very difficult clinical pictures presented by these metastatic, cortical, kidney abscesses, due to cocci.

24. Cutler, C. W., Jr.: Ann. Surg. **102**: 478 (Sept.) 1935.
25. In cases of uncontrolled diabetes, nephrectomy as the primary procedure may be necessary.

REPORT OF FOUR CASES

CASE 1.—*Right kidney carbuncle, anterior surface, perinephric abscess; left kidney, perinephritis following skin infection. Incision and decapsulation of right kidney with enucleation of carbuncle. Eighteen months later, exploratory operation of left kidney, and separation of perinephric adhesions.*

S. K., a woman, aged 25, admitted to the hospital Nov. 2, 1925, had been perfectly well up to six months before, when she began to suffer from nausea and vomiting, with cramplike pains across the epigastrium. These pains recurred every two weeks. Two weeks before admission she had suffered pain in the right hypochondrium, radiating to the right shoulder, associated with nausea and vomiting. The pain was dull and persistent. The night before admission, the patient had chills; the temperature rose to 103 F. She thought she had had elevated temperature since the preceding July. For the past two weeks there had been frequent diarrheal stools without blood; there were no urinary symptoms. Two months before admission the patient had a carbuncle of the neck. On physical examination there was a round, palpable mass in the right upper quadrant, which suggested the diagnosis of subacute gallbladder inflammation. There was also some right costovertebral tenderness as well as percussion tenderness over the liver. Roentgenograms of the chest were negative. Examination of the stools for tuberculosis and amebas was negative. Solitary liver abscess was considered as a possibility and emetine was employed with the hope of controlling or ruling out this condition. Cystoscopy was completely negative, but the pyelogram of the right side showed the pelvis slightly enlarged, the upper calices drawn out and incompletely filled. The lower calices were only partially visualized. The whole picture suggested the possibility of pressure against the caliceal system. The patient's fever continued and, as no focus of infection was revealed by study of the gallbladder, intestinal tract and urinary tract, the persistent fever and moderate local tenderness posteriorly over the kidney and in front of the right kidney, with the history of carbuncle or furuncle of the neck, led to the tentative diagnosis of cortical abscess or carbuncle of the right kidney with perinephric abscess, despite the fact that the ureteral specimens were negative in both smear and culture.

December 4 the right kidney region was explored and on the anterior surface of the middle third a perinephric abscess containing Staphylococcus aureus was encountered, and under the capsule of the kidney a large, necrotic carbuncle was discovered. The carbuncle was about the size of a silver dollar (38 mm.). It was shelled out of the kidney with the finger, and the cavity was packed lightly with iodoform gauze. Following this the patient improved for a while and then began to have some elevation of temperature, with pain and tenderness over the left kidney. The kidney was not enlarged, the temperature was low, and it was suspected that the patient had a cortical abscess in the second kidney. Repeated doses of staphylococcus vaccine were employed without any increase in tenderness or rise in temperature. The right wound gradually closed, and as the temperature became normal the patient was discharged.

Four months later she was readmitted to the hospital for a small, persistent sinus of the right lumbar region, which was curetted. Granulation tissue was nonspecific and the wound closed rapidly. Cystoscopy and urine cultures from both kidneys at this time were negative, and as the temperature subsided and pain disappeared the patient was again discharged.

She was readmitted for the third time in May 1927, complaining again of continuous dull pain in the left upper quadrant, radiating to the left lumbar region. She was about 35 pounds (16 Kg.) below her normal weight and had a persistent temperature up to 101. There were frequent episodes of diarrhea with passage of large amounts of fresh blood. The lower pole of the left kidney seemed irregular and slightly tender. Between the two admissions the patient had an attack of measles and arthritic pains in the spine, arm and shoulder. Cystoscopy at this time was completely negative; a pyelogram of the left kidney showed no abnormality. In view of the conditions found it was suspected that the patient might have a chronic, cortical abscess or carbuncle of the left kidney, and

exploratory operation was done May 27, 1927, which revealed numerous firm, fibrous, perinephric adhesions. The kidney was normal in size; the pelvis of the kidney was empty, containing no stones. After separation of the kidney from these adhesions, a small, yellowish area was found near the hilus, which suggested a possible old cortical focus from which the infection of the perinephric space had developed. No frank pus was seen anywhere. The postoperative course was uneventful. The patient was discharged from the hospital June 16, 1927, having gained 20 pounds (9 Kg.). The pains on the left side had completely disappeared, though she still had slight discomfort at the site of the wound. There were occasional rises in temperature. There was no more diarrhea with blood, the urine continued negative, and the patient resumed her normal activities. Cultures of the urine and guinea-pig inoculations were negative on the last admission, as was the cystogram. There was no reflux up either ureter. During the last six years the patient has been perfectly well except for an attack of undulant fever and a few accidental fractures, and she reported in 1935 that she was in perfect health.

CASE 2.—*Multiple anterenal abscesses simulating gallbladder disease. Staphylococcemia. Patient under observation and having a febrile course for eighty-two days prior to operative therapy. Decapsulation of the right kidney with incision and drainage of multiple, cortical abscesses due to Staphylococcus aureus. Rapid convalescence, with a gain of 70 pounds (32 Kg.).*

C. R., a woman, aged 38, for the five months prior to admission had complained of malaise and pain in the back. A few weeks before admission there was a sharp pain over the whole back, which lasted for a week. There had been pain in the right hypochondrium and right loin for the past two weeks, associated with nocturia and a temperature up to 102. The bowels were constipated. On physical examination there was some right costovertebral tenderness as well as some tenderness anteriorly over the gallbladder; in fact, the tenderness over the gallbladder suggested the possibility of gallbladder disease, though the tenderness was not very severe. The patient's urine showed a few red blood cells, and culture showed Streptococcus viridans. There was moderate leukocytosis, 12,500, with polymorphonuclear cells 80 per cent. Cystoscopy was negative. On the sixth day after admission the temperature rose to 103; there was definite right upper quadrant tenderness. A gallbladder series showed no pathologic condition in the gallbladder. On the seventeenth day after admission, urine culture showed atypical colon bacilli. The next day the patient developed pain and stiffness in the right upper extremity. A control roentgenogram of the genito-urinary tract was again negative. The patient continued to have a high temperature and developed pain in the right shoulder and arm. On the twenty-first day the patient had a chill, the temperature rose to 103, and the first positive blood culture showed Staphylococcus aureus. On the twenty-eighth day she developed again slight tenderness of the right loin, and urine culture at this time showed Staphylococcus aureus. Two days previous to this there was a second positive Staphylococcus aureus blood culture. A roentgenogram of the abdomen showed obliteration of the right psoas margin. To date the only diagnosis that seemed feasible was mild sepsis due to Staphylococcus aureus, with the possibility of a right renal cortical abscess. To emphasize the local renal symptoms the patient was given Staphylococcus aureus vaccine, at first 150 and then 250 million. The only result of this activating experiment was generalized drawing pains. As the tenderness in the right kidney region was not accentuated and as the symptoms were not clear cut enough to justify exposure of the right kidney, the patient was retransferred to the medical service on the thirty-fourth day with a diagnosis of consolidation of the lung, perhaps pulmonary furunculosis. Shortly after this the blood culture became negative; the elevation of temperature continued. On the twenty-ninth day the right side of the chest was aspirated; nothing was obtained. By the forty-seventh day the temperature was still high, 104, and there was slight clubbing of the fingers. There was no definite costovertebral tenderness. On the fifty-first day the record shows that there was no adequate evidence for surgical intervention. The patient's chest was again aspirated, with negative results. On the fifty-second day cystoscopy was again carried out and was negative. The right and left kidney appeared normal. On the fifty-fifth day hemoglobin was 52 per cent, and the patient was given a transfusion. On the sixty-second day there was a swelling near the anus, subcutaneous inflammation. On the seventy-first day the patient was afebrile. On the seventy-fifth day there was a recurrence of mild, right costovertebral tenderness. On the seventy-ninth day the temperature rose again; the patient had general pains and a slight pain in the right flank, without any urinary symptoms. On the eightieth day definite resistance to the right of the umbilicus under the right upper rectus and irregular nontender mass was recognizable. On this day another blood culture was made and proved positive for Staphylococcus aureus. Tenderness in the right costovertebral angle was increasing by the eighty-second day and it seemed fairly definite that the patient had an anterenal, cortical abscess, which had originally simulated gallbladder disease and subsequently had become quiescent. Indications for operation were based on the original right lumbar pain, recurrent right lumbar tenderness, normal urine, positive Staphylococcus aureus blood culture and fever. On the eighty-second day, therefore, an incision and drainage with decapsulation of the right kidney was carried out, and at the same time multiple cortical abscesses on the anterior surface of the upper half of the kidney were incised and in part excised. The pathologic report of the tissue removed showed chronic and acute purulent inflammation of the kidney capsule and kidney tissue. Culture of the pus showed Staphylococcus aureus. Following the operation there was some pyuria due to breaking into the caliceal system at the operation, but the patient made a rapid convalescence and gained 70 pounds (32 Kg.) in a short time.

CASE 3.—*Bilateral, multiple, cortical kidney abscesses following skin infection. Left kidney decapsulated, multiple cortical abscesses exposed, as well as a perinephric abscess. Pus showed Staphylococcus aureus. Apparent uneventful recovery, rise in temperature. Thirteen days following first operation, right kidney exposed and decapsulated for multiple abscesses. Both wounds closed five weeks after first operation. Patient discharged well.*

J. L.,[26] a man, aged 22, admitted to the hospital May 16, 1922, and discharged June 23, 1922, was well until ten weeks before admission, when he had a mild infection of the toe. Two weeks later he developed an infection of the right index finger and two weeks later suffered with a cold in the head and while in bed had an abscess of the scalp. At this time there was some fever for two or three days. Seventeen days prior to admission he developed some pain in the left lumbar region, with fever of irregular character, and was confined to bed. Since then he had pain in the left lumbar region and tenderness, irregular temperature, no chills, and no urinary symptoms.

He was a very pale, septic looking patient. His general physical examination was negative, but in the left lumbar region there was marked tenderness, though no mass could be felt. The blood count showed 29,600 white cells with 86 per cent polymorphonuclears. Urinalysis showed a trace of albumin, some casts and a few white blood cells. Preoperative roentgen examination of the genito-urinary tract was not satisfactory but showed no stone. The preoperative diagnosis was cortical abscess of the left kidney with possibly perinephric abscess.

May 16, under gas, a left lumbar kidney incision was made and a perinephric abscess encountered. The thickened capsule of the kidney was turned back and multiple cortical abscesses were incised without delivering the kidney. The capsule was much thickened and edematous. In one place the cortical abscesses were so grouped as to suggest a suppurating infarct or carbuncle. Rubber dam was placed in front and behind the kidney and a tube between the two sheets of rubber. The wound was left wide open. The culture of the abscesses showed Staphylococcus aureus. From May 17 to May 23 the wound was irrigated daily and the kidney regularly palpated in the wound and several soft suppurating areas in the cortex were broken up with the finger. During this period the temperature gradually diminished and the patient seemed to be convalescing, when suddenly on the 23d his temperature rose to 105. The wound was then explored with the finger and considerable pus was evacuated, the kidney being easily palpated in the bottom of the wound. There was some urinary leakage from the

26. Beer, Edwin: Internat. J. Med. & Surg. **37**: 219-222 (May) 1924.

kidney into the dressing. May 24, the next day, the temperature dropped to normal, and it seemed as if the previous day's digital exploration had controlled the situation. Throughout this period the urine was clear, showing a trace of albumin, a few casts and occasionally a few pus cells.

May 25 to 26 the temperature again rose. Blood culture was negative and tenderness was recognized in the right lumbar region. May 27 the temperature rose to 103.8 and in the right lumbar region, on deep pressure, tenderness was somewhat more marked. Exploration with the finger of the left lumbar wound gave no explanation for the rise in temperature, and on May 29 it was decided that the right kidney area, which was tender, was probably the seat of cortical abscesses with some perinephritis. On that day a right lumbar incision was made and the lower pole of the right kidney was found necrotic and surrounded with thick green pus; the perinephric tissues were thickened and edematous. The right kidney was decapsulated in situ just as the left had been, and multiple abscesses, some as large as cherries, were opened bluntly. Drainage was carried out with two sheets of rubber dam on each side of the kidney and tube between, and the wound was left open without any sutures. After this operation, the wounds on both sides being dressed and irrigated daily and the rubber dam withdrawn gradually, the patient's temperature became normal within two weeks. During this period, several small areas in the right kidney were bluntly opened at dressings with the palpating finger. From the right wound there was also moderate urinary leakage. Beginning with the third week the patient had sufficiently recovered strength to be out of bed, and on June 23, about five weeks after his first kidney operation he was discharged from the hospital. Since the operation the patient has gained about 40 pounds (18 Kg.).

CASE 4.—*Subacute carbuncle of the upper pole of the left kidney. Patient sick five months before first admission, having lost 30 pounds (13.6 Kg.). Complete workup led to no diagnosis. Four months following first discharge, patient apparently well, then severe pain in the left kidney region with elevation of temperature. Exploratory operation disclosed a thick, perinephric capsule, perinephric abscess under the diaphragm and carbuncle involving the upper third of the kidney, which demanded nephrectomy. Pus showed Staphylococcus aureus.*

E. G.,[26] a man, aged 24, seen Oct. 25, 1915, had been sick five months. His trouble began with pain in the left side of the abdomen radiating to the back. It came on suddenly and recurred. He had chills, fever and sweats prior to admission and had lost 30 pounds (13.6 Kg.). On admission the examination was negative except for slight tenderness in the left lumbar region. The urine was clear but contained a faint trace of albumin, a moderate number of red cells and a few pus cells. Cystoscopy was negative. There was good indigo carmine excretion on both sides. The urea concentration in what proved to be the pathologic side was higher than on the normal side (1.2 per cent vs. 0.8 per cent). The urine of both sides showed an occasional cast but no pus cells or tubercle bacilli and was culturally sterile. The ureteral wax bougies revealed no scratch mark. The roentgenogram of the genitourinary tract showed normal kidney outlines. The blood count was normal. There was no pain and no elevation of temperature while the patient was at the hospital. October 30, as he felt perfectly well, he was discharged with the diagnosis in doubt (nephroptosis?). The following four months the patient felt absolutely well, and then he had a severe attack of pain in the left hypochondriac and left lumbar regions. He was sent to Bellevue Hospital. He had a temperature of 101. In the left lumbar region the lower pole of the kidney was palpable and felt moderately enlarged and it was slightly tender. Cystoscopy again was negative and there was no hydronephrosis in the left kidney. The roentgen examination was again negative. In view of the repeated attacks of pain during the last nine months, the recent temperature elevation and the palpable enlarged lower pole of the left kidney, it was deemed advisable to explore. No definite diagnosis had been made, though it was thought that we were dealing with a kidney tumor or a painful perinephric inflammation. April 13, 1916, an exploratory operation was carried out and, much to my surprise, the kidney had to be removed for chronic carbuncle with massive perinephritis and perinephric abscess under the diaphragm. The conditions found at operation were most interesting. The left kidney was firmly fixed above the lowest rib, within a thick shell of exudate which was almost an inch thick at the level of the twelfth rib and surrounded it in such a manner as to suggest a sarcoma of the rib. This had undoubtedly impressed me as the lower pole of the kidney. The twelfth rib was resected, and by cutting through the infiltrated tissues of the perinephric region, near the upper pole of the kidney, I opened a fair sized abscess. By the coarsest dissection the thickened perinephric exudate and kidney were partially freed so that I could orient myself. It was then apparent that the perinephric tissues had been consolidated by an inflammatory process into a thick shell of scar tissue and that within this rind lay the diseased kidney. In places this capsule was almost an inch thick. After excising most of the enveloping capsule that appeared in the wound, I removed the kidney. Pus was seen to exude from the cortical kidney abscesses into the perinephric tissues and probably communicated with the large abscess over the upper pole. The pus showed the presence of Staphylococcus aureus. The kidney contained a large purulent infarct with thousands of small abscesses—a typical carbuncle. The convalescence was uneventful except for a wound infection, and the patient has remained well.

45 East Eighty-Fifth Street.

OBSERVATIONS OF THE GALLBLADDER AND BILE DURING PREGNANCY AT TERM

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The frequency of abdominal distress in the upper right quadrant of the abdomen of women during antepartum and postpartum periods led me for the past five years into the routine practice of inspecting, palpating and aspirating the gallbladder in all my cesarean cases. The procedure was simple, because I use the high incision above the navel.

First of all, the uniformly distended bladder made me interested and inquiring, and then the hope of gaining more information suggested the bacteriologic and later the chemical analysis of the aspirated bile. I found that the results were difficult to interpret in many cases, and at the same time the procedure was accompanied with no dangers or complications.

However, it is not within the scope of this paper to enter into the physiology of the liver; but some of the observations, readings and conclusions may be of interest and promote further investigation, because a search of the present-day literature discloses that the study of the bile of pregnant women at term has never before been attempted.

In a review of the literature by Ivy [1] on the subject of the evacuation of the gallbladder, he notes that it is an established fact that the sphincter of the choledoduodenal mechanism is essential for the filling of the gallbladder as well as the tone of the gallbladder musculature.

In attempting to evaluate the various factors concerned in emptying the gallbladder, he states that the contraction of the gallbladder musculature is excited by the hormone cholecystokinin and by the reflex nervous mechanisms that bring about an increased intravesical pressure, which with a relaxation of the sphincter of Oddi and the duodenal musculature permits the flow of bile. He also states that duodenal peristalsis is not essential but may assist evacuation

1. Ivy, A. C.: Physiol. Rev. **14**: 1 (Jan.) 1934; cited by Ivy, A. C., and Bergh, G. S.: The Applied Physiology of the Extrahepatic Biliary Tract, J. A. M. A. **103**: 1500 (Nov. 17) 1934.

by possibly exerting a milking action on the intramural portion of the common duct and that intra-abdominal pressure per se plays no rôle in the gallbladder evacuation.

Interesting studies on the reflex inhibition and excitation of the gallbladder from electrical stimulation of the gastro-intestinal tracts of cats at various levels were made by Birch and Boyden,[2] and they noted that no reflex contraction was ever initiated from any portion of the intestine but that stimulation of the pars pylorica showed a sudden contraction of the gallbladder. They also noted that relaxation occurred when various portions of the duodenum, jejunum and cecum were stimulated, and that the cecum was most sensitive in not only bringing about inhibition of the gallbladder evacuation but also with regard to pain. Boyden [3] also noted that stimulation of the plexus which accompanies the left gastric artery induced relaxation of the contracted gallbladder.

Ivy also states in his review that Mann and Higgins observed in pregnant dogs, guinea-pigs and gophers that the gallbladder either does not empty or empties only partially; but there seems to be an exception in that the gallbladders of some pregnant dogs do empty quite normally. Their contention is that this might be due to disturbed gastro-intestinal motility or peristalsis.[4]

Westphal [5] observed that the tone of the sphincter of Oddi is increased in pregnancy.

Kalk and Schöndube [6] report that the gallbladder of pregnant women contracts earlier and more quickly than that of nonpregnant women after a subcutaneous injection of solution of posterior pituitary.

TABLE 1.—*Blood Cholesterol at Term, Determined by the Bloor Method*

Case	Blood Cholesterol, Mg.	Case	Blood Cholesterol, Mg.
1	175	22	312
2	150	23	177.5
3	350	24	191
4	207	25	207.5
5	191	26	207.5
6	133	27	250
7	177	28	230
8	277.5	29	250
9	136.2	30	312.5
10	207	31	226
11	177	32	226
12	166	33	207
13	191	34	138
14	225	35	166
15	350	36	138
16	312	37	200
17	178.7	38	200
18	177	39	245
19	166	40	275
20	166	41	166
21	226		

Mg. per 100 Cc.	Cases: Number	Cases: Per Cent
From 1 to 200 mg.	19	46
From 200 to 300 mg.	20	48
From 300 to 400 mg.	5	6

Failure to visualize the gallbladder in more than 50 per cent of the primiparas who had no history or clinical evidence of biliary tract disease was noted by Levyn, Beck and Aaron,[7] while Crossen and Moore [8] failed to visualize the bladder in twenty-two of twenty-five pregnant women at the fortieth week. They believed that their results were due to technical roentgenologic difficulties.

In 390 cesarean sections in normal pregnant women at term, I found approximately 75 per cent with large atonic globular, distended gallbladders. Why?

TABLE 2.—*Ratio Between Blood and Bile Cholesterol in Twenty Pregnant Women at Term*

Case	Blood Cholesterol	Bile Cholesterol	Ratio Blood-Bile Cholesterol
1	277.5	470	1:1.5
2	136.5	700	1:5.1
3	191	435	1:2.2
4	166	200	1:1.2
5	207	545	1:2.6
6	178	520	1:2.8
7	133	480	1:3.6
8	177	325	1:1.9
9	207	430	1:2
10	277.5	750	1:2.7
11	226	500	1:2
12	175	750	1:4.2
13	350	405	1:1.1
14	225	560	1:2.4
15	166	190	1:1.1
16	177	775	1:4.3
17	166	180	1:1
18	177.5	325	1:1.8
19	350	200	1:1.2
20	177	375	1:2.1

Ratio	Cases: Number	Cases: Per Cent	
1:1	8	40	80%
1:2	8	40	
1:3	1	5	
1:4	2	10	
1:5	1	5	

Is it a functional motor disturbance with a spastic sphincter of Oddi, accompanied by a marked atonic distention of the gallbladder as Westphal indicates, or is it because these patients had not eaten before these specimens were taken? Ivy believes the explanation of "atonic distention" most reasonable but is at a loss to explain the cause. He[9] offers the suggestion of reflexes from the colon with associated constipation.

Considering the work of Birch and Boyden, and realizing that the majority of pregnant women complain of constipation, Ivy's suggestion that constipation might be at least one exciting cause which promotes relaxation of the gallbladder with the resultant distention seems also to me to be a reasonable contributing factor. It would also aid in giving a partial explanation of the distress these women experience in the upper right quadrant.

My observations bear out the observations of Mann and Higgins,[4] and I am in accord with their suggestion that one of the reasons gallbladders do not empty is disturbed gastro-intestinal motility.

In my series, 2 cc. of solution of posterior pituitary was injected after the uterus had been closed and before the gallbladder was aspirated. No effect was ever noted on the contractility of the gallbladder. This distended organ remained distended, while the effect of the pituitary extract on the uterus was most marked. These observations are contrary to the work of Kalk and Schöndube, whose report I have previously mentioned.

I believe that there is marked stasis of bile in 75 per cent of the cases referred to, because of the appearance of the aspirated bile, which is thick, tarry and viscous. This would explain the frequent failure of visualization of the gallbladder during pregnancy, as noted by Levyn, Beck, Aaron, and Crossen and Moore.

2. Birch, C. L., and Boyden, E. A.: Am. J. Physiol. **92:** 301 (March) 1930.
3. Boyden, E. A.: Proc. Soc. Exper. Biol. & Med. **27:** 647 (April) 1930.
4. Ivy,[1] Mann, F. C., and Higgins, G. M.: Effect of Pregnancy on the Emptying of the Gallbladder, Arch. Surg. **15:** 552 (Oct.) 1927.
5. Westphal, K.: Ztschr. f. klin. Med. **96:** 22, 52, 95 (Jan.) 1923.
6. Kalk, H., and Schöndube, W.: Ztschr. f. ges. exper. Med. **53:** 461, 1926.
7. Levyn, L.; Beck, E. C., and Aaron, A. H.: Cholecystography in the Late Months of Pregnancy, Radiology **11:** 48 (July) 1928.
8. Crossen, R. J., and Moore, Sherwood: Am. J. Obst. & Gynec. **16:** 840 (Dec.) 1928.
9. Ivy, A. C.: Personal communication to the author.

BACTERIOLOGIC OBSERVATIONS

Three hundred and ninety samples of bile were studied bacteriologically in two Buffalo Hospital laboratories. I am indebted to Dr. Margaret Warwick of the Millard Fillmore Hospital and Dr. W. J. Rose of the Buffalo General Hospital for the bacteriologic work. The bile was obtained by introducing, at an angle, a hypodermic needle (gage 24) into the gallbladder, and this was easily done because of the greatly increased pressure within the gallbladder. Clinically it was found that postoperative nausea and vomiting were markedly reduced by the release of this intra gallbladder pressure.

Approximately 30 cc. of bile was removed in each case and placed in a sterile bottle. At the beginning of this investigation frequent contaminations were noted, but this error in technic was later corrected. The samples were immediately sent to the laboratory. They were cultured in plain broth, in dextrose broth and on agar slants. About one half were cultured anaerobically. Six specimens showed pathogenic growths. In other words, 2 per cent of the patients had pathogenic organisms in the bile. One culture showed a mixed growth of streptococci and staphylococci. There were three pure cultures of Bacillus coli. There was one culture of pneumococci (this gallbladder contained many stones). There was one culture of gram-positive diplococci. In one case gallstones were palpated but the culture was negative.

There were fifty-five evident contaminations: Staphylococcus aureus, twelve; Staphylococcus albus, seventeen; saprophytic cocci, two; saprophytic gram-positive, spore bearing bacilli, twenty-four.

These observations are at variance with the work of Dr. Sciuti [10] of Italy and Dr. Lloyd Arnold of the University of Illinois. Dr. Sciuti concluded from his experiments that, in the majority of animals at least, a condition of latent microbism is present in the bile content of normal gallbladders, while Dr. Lloyd Arnold, who worked on dogs several years ago, found bacteria in about 50 per cent of the cases and in all the strain of bacteria was not pathogenic. He also tried to raise the pathogenicity by passage through dogs without success.

The data in table 1 of the blood cholesterol of forty-one patients at term, as determined by the Bloor method, bear out the known fact that there is a general increase of cholesterol in the blood during pregnancy.

TABLE 3.—*Analysis of Fifty-Eight Specimens*

Case	Bile Salts Mg. per 100 Cc.	Cholesterol, Mg. per 100 Cc.	Ratio of Bile Salts to Cholesterol	Calcium	Cholesterol	Calcium Bilirubinate	Amylase Activity	Lipase Activity	Protease Activity	Culture
1	800	151.8	5:1	±	±	..	0	0	0	Staphylococcus albus
2	462	224	2:1	±	±	Black pigment	40	0	0	B. coli, L. aerogenes
3	373	160	2:1	±	±	Black pigment	48	0	0	B. coli, L. aerogenes
4	325	Trace	...	0	0	0	0	0	0	Contamination
5	570	122	5:1	0	0	Black pigment	0	0	0	Negative
6	575	75	8:1	0	0	0	0	0	0	Negative
7	Specimen broken									
8	540	171	3:1	±	0	0	0	0	0	Negative
9	411	299	1:1	±	0	0	0	0	0	Nonhemolytic streptococcus
10	805	91	9:1	0	0	0	0	0	0	Negative
11	889	96	9:1	±	±	0	0	0	0	Negative
12	705	190	4:1	±	0	0	0	0	0	Negative
13	387	158	3:1	±	±	0	0	0	0	Negative
14	461	443	1:1	0	+	0	0	0	0	Negative
15	148	278	1:2	0	±	0	0	0	0	Staphylococcus aureus
16	206	160	2:1	+	0	0	0	0	0	Negative
17	400	958	1:3	0	++++	..	0	0	0	Contaminated
18	533	Trace	...	0	0	0	0	0	0	Negative
19	382	Trace	...	0	0	0	0	0	0	Contaminated
20	416	100	4:1	0	0	0	0	0	0	Negative
21	350	270	1:1	0	0	0	0	Q. N. S.	G. N. S.	Negative
22	297	264	1:1	0	0	0	0	0	0	Negative
23	379	216	2:1	0	0	0	31	0	0	Negative
24	422	255	2:1	+	+++	0	0	Q. N. S.	G. N. S.	Negative
25	768	576	1:1	+	++	+	0	Q. N. S.	G. N. S.	Sarcina
26	425	176	3:1	+	0	0 fatty acid	13	0	0	Negative
27	484	480	1:1	+	+++	0	Trace	0	0	Negative
28	714	600	1:1	+	++++	0 fatty acid	Trace	0	0	Negative
29	462	600	1:2	++	++	±	0	0	0	Staphylococcus albus
30	448	522	1:1	+	++++	0 fatty acid	0	0.4	0	Negative
31	451	194	...	+	++++	±	Trace	0	0	Negative
32	468	400	1:1	..	++++	±	34	0	0	Gram and diplococci
33	504	G. N. S.	...	+	+	0	G. N. S.	0	0	Sarcina
34	1,188	353	3:1	+	++++	0 fatty acid	Trace	Trace	0	Negative
35	652	666	1:1	+	++++	±	Trace	0	0	Negative
36	435	245	2:1	+	++++	0	Trace	0	0	Negative
37	422	156	3:1	±	++++	± fatty acid	0	0	0	Negative
38	560	158	4:1	±	++++	±	42	0	0	Negative
39	577	300	2:1	±	++++	0 fatty acid	0	0	0	Negative
40	395	600	1:2	±	++++	± fatty acid	0	0	0	Negative
41	468	414	1:1	++	+++	±	Trace	0	0	Gram and cocci, sarcina
42	458	343	1:1	±	++	+ fatty acid	Trace	Trace	0	Negative
43	458	316	1½:1	±	++++	+ fatty acid	0	0	0	Negative
44	476	255	2:1	+	++	±	Trace	0	0	Sarcina
45	686	160	4:1	±	++++	0 fatty acid	15	0	0	Negative
46	1,052	500	2:1	±	++++	0	43	Trace	0	Negative
47	895	267	3:1	±	±	0	Trace	0	0	Staphylococcus aureus
48	512	240	2:1	±	++++	0	Trace	0	0	Negative
49	521	30	17:1	±	++	0	0	0	0	Negative
50	545	333	2:1	++	++++	0	Trace	0	0	Staphylococcus albus
51	1,121	355	3:1	+	+	0	G. N. S.	0	0	Negative
52	458	80	6:1	±	++++	0	Trace	0	0	Staphylococcus albus
53	628	632	1:1	±	++++	±	0	0	0	Negative
54	390	166	2:1	±	++	0	0	0	0	Negative
55	769	200	4:1	+	+++	0 fatty acid	Trace	0	0	Negative
56	526	105	5:1	±	++++	0	20	Trace	0	Negative
57	845	462	2:1	±	++++	+	Trace	0	0	Negative
58	882	343	3:1	±	++++	±	39	0	0	Negative

10. Sciuti, cited in Rome letter, J. A. M. A. **103**: 2043 (Dec. 29) 1934.

Forty-six per cent of the patients had blood cholesterol between 1 and 200 mg. per hundred cubic centimeters, forty-eight per cent of the patients between 200 and 300 mg., and 6 per cent between 300 and 400 mg.

While much has been done in the study of the cholesterol content of the blood by Herrmann, Neuman, Slemons, Stander, Tyler, Underhill and many others, I can find no work reported in which the cholesterol content of bladder bile and blood were estimated in the same patient. Therefore, in a series of twenty cases I obtained a sample of blood from the uterine incision, and after the closure of the uterus a sample of bile was taken from the gallbladder by the method already referred to. While I realize that no reliable and definite conclusion can be reached from such a small series in trying to find a ratio between blood-bile cholesterol in pregnant women at term, I am submitting the results for discussion.

TABLE 4.—*Analysis of Data*

Concentration of Bile Salts, Mg. per 100 Cc.	Number of Cases	Per Cent	
100-200	1	2	
200-300	2	3	
300-400	8	14	
400-500	19	33	
500-600	11	19	95%
600-700	3	5	over
700-800	4	7	300 mg.
800-900	6	10	
900	3	5	

TABLE 5.—*Concentration of Cholesterol*

Mg. per 100 Cc.	Number of Cases	Per Cent
Trace	3	5
Less than 100	5	9
100-200	15	26
200-300	12	21
300-400	7	12
400-500	5	9
500-600	4	7
600-700	1	2
700-800	0	
800-900	0	
900	1	2

It will be seen in table 2 that in eight cases (40 per cent) the blood-bile cholesterol ratio was 1:1. In another eight cases (40 per cent) the ratio was 1:2. In one case (5 per cent) the ratio was 1:3. In two cases (10 per cent) the ratio was 1:4. In one case (5 per cent) the ratio was 1:5. I am continuing this investigation as a joint arbeit with Dr. I. S. Ravdin and his associates from the department of surgical research of the University of Pennsylvania. Through the courtesy of Dr. R. Franklin Carter of the New York Post Graduate Hospital, fifty-eight specimens were analyzed and for the analysis and aid in interpretation of these cases I am indebted to Dr. Bernard Maraffino of the same hospital.

Of these fifty-eight cases, 60 per cent showed cholesterol concentrations between 100 and 400 mg. per hundred cubic centimeters (table 5); 66 per cent of the cases showed bile salt concentrations between 300 and 400 mg. (table 4).

There are many theories and data in the literature concerning the etiology of gallstones. One of the most recent theories is that of Andrews, Schoenheimer and Hrdina.[11] Their main contention is that gallstones (human) with very few exceptions are composed for the main part of cholesterol and that cholesterol precipitation is caused by a lowering of the bile salt content of the bile. They believe that the cholesterol is held in solution by the bile salts in a series of loose and firm chemical complexes. Any change in the salt cholesterol ratio, which they consider is at the level of 20 in normal man, will precipitate cholesterol. Neuman[12] believes that the normal bile salt: cholesterol ratio is 18. Walsh[13] came to the conclusion while dissolving human gallstones in the gallbladders of dogs that the solubility of cholesterol in bile depends on an interrelationship between fatty substances, bile salts or acids and cholesterol. Altering the concentration of any one of these alters the ability of bile to hold cholesterol in an aqueous solution.

Ravdin, Riegel, Johnston and Morrison[14] present evidence that, while a change in the bile salt: cholesterol ratio may be a factor in gallstone formation, it is not the sole factor.

In my first series of fifty-eight cases, the figures are surprisingly low. As will be noted, the bile cholesterol ratio varies from one to seventeen (tables 3 and 6). In 62 per cent of the cases the ratio of bile salts to cholesterol was between 1 and 3, and in 7 per cent of the cases the ratio was reversed (1:2 and 1:3, tables 3 and 6). In discussing these observations, Dr. Ravdin was impressed with the very low bile salt concentrations as the most outstanding fact of this paper. He stated that the concentrations were well within the range of bile salt in liver bile and similar to those found in gallbladder bile from a damaged bladder. These specimens, however, were taken from the gallbladders of supposedly healthy pregnant women at term. The method used in the bile salt analysis was the Katayama method, a modification of Szilard's.

TABLE 6.—*Ratio of Bile Salts to Cholesterol*

	No. of Cases
1:1	14
2:1	13
3:1	9
4:1	5
5:1	3
6:1	1
8:1	1
9:1	2
17:1	1
1:2	3
1:3	1

TABLE 7.—*Relation Between the Amount of Cholesterol and the Presence of Crystals* *

Cholesterol, Mg. per 100 Cc.	Factor for Calcium Bilirubinate	Factor for Cholesterol Crystals
Less than 100	0.0	0.6
100-200	0.1	0.5
200-300	0.1	0.7
300-400	0.4	1.0
400-500	0.6	1.0
500-600	0.3	1.0
600-700	0.8	1.0
900	1.0	

* As expressed in arbitrary factor $\frac{\text{Number of cases with crystals}}{\text{Number of cases}}$

The data in this series would tend to show that Neuman[12] and Andrews, Schoenheimer and Hrdina[11] are

11. Andrews, Edmund; Schoenheimer, Rudolf, and Hrdina, Leo: Etiology of Gallstones, Arch. Surg. **25**: 796 (Oct.) 1932.

12. Neuman, E. E.: Beitr. z. path. Anat. u. z. allg. Path. **86**: 187 (Jan. 3) 1931.

13. Walsh, E. L.: Etiology of Gallstones, Arch. Path. **15**: 698-713 (May) 1933.

14. Ravdin, I. S.; Riegel, Cecilia; Johnston, C. G., and Morrison, P. J.: Studies in Biliary Tract Disease, J. A. M. A. **103**: 1504 (Nov. 17) 1934.

incorrect in their assumption that cholesterol precipitation is caused by the lowering of the bile salt content of the bile. There must be some other etiologic factor in stone formation, for none of these fifty-eight cases showed biliary symptoms or palpable stones.

Dr. Charles G. Johnston [15] of the surgical research department of the University of Pennsylvania School of Medicine expressed surprise that calcium bilirubinate was present on microscopic examination in so few of these cases, since most specimens of duodenal drainage at least develop calcium bilirubinate appearing material from standing (table 3). I cannot interpret these microscopic observations, because it is true that these specimens were examined after they had been standing a long time.

TABLE 8.—*Ratio of Bile Salts to Cholesterol* *

Ratio	Factor
1:1	0.7
2:1	0.9
3:1	0.4
4:1	0.4
5:1	0.7
6:1	1.0
8:1	0.0
9:1	0.5
17:1	1.0
1:2	1.0
1:3	1.0

* Of the total of fifty-eight cases, fifteen showed no crystals (calcium bilirubinate and cholesterol); in fifteen cases the cholesterol was under 300 mg. per hundred cubic centimeters. All the cases in which the cholesterol concentration was over 300 mg. per hundred cubic centimeters showed crystals, calcium bilirubinate and cholesterol.

Twenty-four cases, or about 41 per cent, showed some degree of amylase activity (fourteen having a trace); of the six cases in the group which had a cholesterol concentration of over 500 mg. per hundred cubic centimeters, only one (16 per cent) showed definite amylase activity (table 3). Of the fifty-two cases in which cholesterol concentration was under 500 mg. per hundred cubic centimeters, nine showed definite amylase activity (17 per cent).

In another series of fifty-five cases studied, only twelve cases showed some degree of amylase activity (20 per cent). This low figure might be explained by the fact that these specimens were not examined for a long time after the laboratory received them. Six cases (four showing only a trace) were in the group in which cholesterol concentration was over 500 mg. per hundred cubic centimeters. The remaining six cases (cholesterol concentration under 500 mg. per hundred cubic centimeters) showed greater amylase activity (table 9).

Five cases showed positive cultures (two Bacillus coli); all these cases showed cholesterol concentrations under 300 mg. per hundred cubic centimeters; three of them showed definite amylase activity. All the cases in this group with cholesterol concentrations over 300 mg. per hundred cubic centimeters were negative in culture. In four of the positive cases there were crystals (table 3).

SUMMARY OF CHEMICAL ANALYSIS OF DATA

1. Sixty per cent of these cases gave cholesterol concentrations between 100 and 400 mg. per hundred cubic centimeters.

2. Sixty-six per cent gave bile salt concentrations between 300 and 400 mg. per hundred cubic centimeters.

3. Sixty-two per cent gave a bile salt:cholesterol ratio between 1:1 and 3:1. In 7 per cent the ratio was reversed (1:2, 1:3).

4. The greater the concentration of cholesterol, the greater the number and more constant was the presence of calcium bilirubin and cholesterol crystals.

5. There was no definite relationship between the bile salt:cholesterol ratio and the number and constancy of the crystals found.

6. Only 26 per cent of these cases showed no evidence of cholesterol or calcium bilirubin crystals. In all these cases cholesterol was below 300 mg. per hundred cubic centimeters. All the cases in which the cholesterol concentrations were over 300 mg. per hundred cubic centimeters showed cholesterol or calcium bilirubin crystals or both.

7. Thirty-six cases from a group of 113 cases studied (31 per cent) showed some degree of amylase activity. There seemed to be no definite relation between amylase activity and cholesterol concentration, although greater amylase activity was noted in cholesterol concentrations under 500 mg. per hundred cubic centimeters.

8. The five cases in which positive cultures were obtained all showed a cholesterol concentration under 300 mg. per hundred cubic centimeters. All the cases in which there were cholesterol concentrations over 300 mg. per hundred cubic centimeters apparently gave negative results on culture.

9. Four of the five cases in which there were positive cultures showed cholesterol or calcium bilirubin crystals or both, only one case showing no crystals.

10. In a series of twenty cases the blood-bile cholesterol ratio was 1:1, in eight cases (40 per cent) 1:2, in eight cases (40 per cent), in one case 1:3 (5 per cent, in two cases 1:4 (10 per cent), in one case 1:5 (5 per cent).

GENERAL CONCLUSIONS

1. The majority (75 per cent) of normal gallbladders during pregnancy, at term, are distended.

2. Appropriate intake of fat during the antepartum period would seem advisable as a preventative of gallbladder distress, provided no previous cholecystitis exists.

3. Stasis of bile in gallbladders of pregnant women at term is common.

4. Bacterial invasion of the gallbladder bile during pregnancy at term is rare.

TABLE 9.—*Cholesterol Content*

Cholesterol Content, Mg. per 100 Cc.	Amylase Activity
325	19
175	Trace
385	32
325	33
450	26
230	14

5. Metabolic dysfunction associated with functional motor disturbance and stasis rather than infection or mechanical pressure would seem to be the forerunner of biliary disease in women.

6. Hypercholesterolemia exists in pregnancy at term.

7. No definite harm was done to our patients by our investigation.

8. Clinically, postoperative nausea and vomiting were markedly reduced by release of the intra gallbladder pressure.

9. No definite ratio between the blood-bile cholesterol concentrations was demonstrated.

10. More study and more exact methods are required for better understanding of the bile and gallbladder during pregnancy.

689 Forest Avenue.

15. Johnston, Charles G.: Personal communication to the author.

INCREASED CARBON DIOXIDE TENSION

AS AN AID IN THE PRIMARY ISOLATION OF CERTAIN (MEPHITIBIC) PATHOGENIC BACTERIA

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AND
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BOSTON

The importance of an increased amount of carbon dioxide in the air in contact with primary cultures of certain pathogenic micro-organisms has been known for a good many years. Cohen and Fleming [1] employed this method, with associated Bacillus subtilis cultures, in isolating meningococci, but regarded their success as due to the reduction in oxygen tension. Chapin [2] obtained much better growths of primary cultures of gonococci by increasing the carbon dioxide content of the air to 10 per cent. Bang [3] carried out a series of experiments on the effects of varying carbon dioxide and oxygen tensions on the growth of Brucella abortus but came to the conclusion that the latter, rather than the former, was the governing factor. A good many years later Huddleson [4] definitely established the importance of increased carbon dioxide tension for the growth of recently isolated strains of Brucella abortus, but he believed that his optimum concentration, 10 per cent, created the most favorable hydrogen ion concentration for growth. Smith [5] conclusively proved that a carbon dioxide concentration of from 0.25 to 10 per cent in the confined air is absolutely essential for the unrestricted growth of freshly isolated strains of Brucella abortus, that the moisture in the closed jar is only a contributing factor, and that changes in oxygen tension and hydrogen ion concentration within fairly wide limits have little, if any, effect on growth. With freshly isolated cultures of Haverhillia multiformis, Parker and Hudson [6] stated that "on a solid medium . . . the most favorable growth is obtained in a sealed jar in which a candle has been burned."

Recent work by Gladstone, Fildes and Richardson [7] has shown that the presence of carbon dioxide in a medium is a prerequisite for the growth of all bacteria examined. There is no doubt, however, that some of the more fastidious pathogenic bacteria, when freshly isolated, resent even the atmospheric concentration of carbon dioxide. This is not to be wondered at, for during their existence in the animal body they are accustomed to a free carbon dioxide concentration of approximately 4 per cent. The importance of slight increases in carbon dioxide tension was foreseen by Smith,[5] who made the statement over ten years ago that, if further study should prove that other pathogenic types share the carbon dioxide requirements of Brucella abortus, the isolation and early cultivation of such types should be greatly promoted by its use.

Thompson [8] has recently described a simple method for supplying carbon dioxide in jars for the primary culture of gonococci and meningococci. This depends on the addition of sulfuric acid to the proper amount of sodium bicarbonate in solution, both contained within the jar.

The candle jar devised by Parker and Hudson [6] is even simpler and has been used for several years in this laboratory for the rotuine incubation of blood culture flasks and petri dish subcultures from cases in which Brucella abortus, Brucella melitensis or Haverhillia multiformis has been suspected as the etiologic factor. The jars are ordinary museum jars, approximately 15 cm. in diameter and 30 cm. high. A candle 8 or 10 cm. long is placed in the bottom at one side, the flasks and petri dishes are placed in the jar, the candle is lighted and the cover is fitted on top. The candle flame dies out within ten or twenty seconds. Plasticine serves as a seal, except in jars in which the joint has been reground and where stopcock grease is sufficient. This simple procedure produces an atmosphere which contains from 1.5 to 3.5 per cent of carbon dioxide, as shown in the table. These concentrations are well within the low and high optimums established by Smith [5] for Brucella abortus, which is probably as fastidious as any of these bacteria. Incubation for forty-eight hours results in little change in carbon dioxide concentration. In jars filled with actively growing cultures of the more easily grown bacteria there should be an increase in carbon dioxide concentration, owing to the respiration and metabolic activities of the organisms.

Percentage of Carbon Dioxide and of Oxygen

	Before Incubation	After 48 Hours' Incubation
Small candle jar (12 by 20 cm.)		
Percentage of carbon dioxide	1.74	1.85
Percentage of oxygen	17.87	18.00
Large candle jar (15 by 30 cm.)		
Percentage of carbon dioxide	2.91	3.08
Percentage of oxygen	16.76	16.56

Identical results can be obtained by flushing out sealed jars with compressed gas mixtures containing the desired amount of carbon dioxide. The accuracy of such a procedure would be desirable in investigative work, but the optimum range of carbon dioxide concentration is so broad that the expense of the necessary equipment is not warranted in a routine bacteriologic laboratory.

For the past year jars of this sort have been used for the primary isolation of many of the bacteria encountered in the routine hospital work. Primary cultures on sheep's blood agar plates of spinal and joint fluids containing, respectively, meningococci and gonococci show profuse growth after twenty-four hours' incubation and the colonies are often 3 to 4 mm. in diameter. Foul smelling purulent fluids, which show short chains of small gram-positive cocci on smears from the original fluid or from a blood broth subculture, but which show no growth on an ordinary blood agar plate, yield abundant growth of alpha or beta hemolytic streptococci when the blood agar plates are placed in a candle jar.

To emphasize the importance of this method, the following is a list of routine bacteriologic specimens submitted to this laboratory during July 1935 for

From the Mallory Institute of Pathology, Boston City Hospital.

1. Cohen, M. B., and Fleming, J. S.: The Diagnosis of Epidemic Meningitis and the Control of Its Treatment by Rapid Bacteriologic and Serologic Methods, J. Infect. Dis. **23**: 337 (Oct.) 1918.
2. Chapin, C. W.: Carbon Dioxide in the Primary Cultivation of the Gonococcus, J. Infect. Dis. **23**: 342 (Oct.) 1918.
3. Bang, B. L. F.: The Etiology of Contagious Abortion, Ztschr. f. Tiermed. **1**: 241, 1897.
4. Huddleson, I. F.: The Importance of an Increased Carbon Dioxide Tension in Growing Bact. Abortus (Bang), Proc. Soc. Am. Bact., Abs. Bact. **5**: 16, 1920.
5. Smith, Theobald: Some Cultural Characters of Bacillus Abortus (Bang), with Special Reference to Carbon Dioxide Requirements, J. Exper. Med. **40**: 219 (Aug.) 1924.
6. Parker, Frederic, Jr., and Hudson, N. P.: The Etiology of Haverhill Fever (Erythema Arthriticum Epidemicum), Am. J. Path. **2**: 357 (Sept.) 1926.
7. Gladstone, G. P.; Fildes, Paul, and Richardson, G. M.: Carbon Dioxide as an Essential Factor in the Growth of Bacteria, Brit. J. Exper. Path. **16**: 335 (June) 1935.
8. Thompson, Luther: A Simple Method of Supplying Carbon Dioxide in Jars for Bacteriologic Cultures, Am. J. Clin. Path. **5**: 313 (July) 1935.

which the candle jar was necessary for the process of identification:

1. Pus from abscess of buttock. Gram-positive cocci in pairs and short chains in blood broth. No growth on blood agar plate. Subculture from blood broth to candle jar blood agar plate yielded many very large flat alpha hemolytic colonies (pneumococcus type VIII).

2. Blood culture. Gram positive diplococci. No growth on subculture to blood agar plate. Subculture to candle jar blood agar plate yielded many small alpha hemolytic colonies (Streptococcus viridans).

3. Pus from appendix abscess. Gram-positive cocci in pairs and short chains in blood broth. No growth on blood agar plate. Subculture from blood broth to candle jar blood agar plate yielded many large gray alpha hemolytic colonies (streptococcus with alpha hemolysis).

4. Spinal fluid. Gram-negative biscuit-shaped diplococci in blood broth. No growth on blood agar plate. Subculture from blood broth to candle jar blood agar plate yielded many very large gray translucent colonies (meningococcus).

5. Pus from tubo-ovarian abscess. As before (gonococcus).

6. Fluid from knee joint. As before (gonococcus).

7. Blood culture. Very small gram-negative bacilli in blood broth. No growth on blood agar plate. Subculture from blood broth to candle blood agar plate eventually yielded numerous small pin-point colonies (unidentified gram-negative bacillus [9]).

As this requirement seems to be a fairly constant cultural characteristic of certain bacteria, it is suggested that the condition be termed "mephitibiosis" and that the capacity of growing under such a condition be expressed by the adjective "mephitibic." The first member is derived from the noun "mephitis," meaning foul or contaminated air. "Mephitic air" is an old term for carbon dioxide.

ACTIVE IMMUNIZATION TO SCARLET FEVER WITH LESS REACTION

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At the Evanston Hospital we have adopted the procedure of testing the nurses, when they enter training, for immunity to scarlet fever by means of the Dick test, and actively immunizing those giving a positive test by subcutaneous injections of the scarlet fever streptococcus toxin.

From March 1924 to October 1935, as shown in table 1, 439 nurses were tested and of this number 249, or 56.7 per cent, showed a positive Dick test and were given the injections of scarlet fever streptococcus toxin used to produce an active immunity.

The amount of toxin used to produce this immunity was gradually increased, by the Dicks, to a total of 115,500 skin test doses divided as follows: first dose 500 skin test doses, second dose 2,000, third dose 8,000, fourth dose 25,000, fifth dose 80,000. The second dose has four times the amount of toxin contained in the first, the third dose has four times the amount of toxin contained in the second, the fourth three and one-eighth times the amount of toxin in the third, and the fifth three and one-fifth times the amount of toxin in the fourth.

When the injections of toxin were given as outlined, the number and severity of the reactions increased markedly as compared with the smaller dosage previously used. This is shown in table 2. As shown in table 3, the reactions were manifested by general malaise, chills, headache, sore throat, backache, body aches, nausea, rash, fever, vomiting, painful local reactions, diarrhea, weakness, and stiff and painful joints occurring separately or in various combinations. It seemed to us that the large number of reactions was due possibly to the large increase in the amount of toxin in each succeeding dose over that contained in the preceding one. In an attempt to avoid these unpleasant reactions, some of the usual doses of toxin were divided and the increase in the amount of toxin in each succeeding dose was made more gradually. Beginning with the class of 1933, the splitting of some of the usual doses, especially the third dose of 8,000 skin test doses, reduced the reactions to 60.8 per cent of those receiving the toxin. With the class of 1934, further division of the usual doses produced reactions in 54.5 per cent of those injected.

Believing that further improvement in the method was possible, the following modification for actively immunizing against scarlet fever was adopted for the average case, beginning with the class of 1935: first dose 150 skin test doses, second dose 300, third dose 600, fourth dose 1,200, fifth dose 2,500, sixth dose 5,000, seventh dose 10,000, eighth dose 20,000, ninth dose 40,000, tenth dose 80,000. This makes a total of 159,750 skin test doses, which is 38.3 per cent more toxin than is given by the injection of the usual five doses. With this modification, 26.3 per cent of those receiving the toxin developed reactions in the class of 1935, 10.5 per cent in the class of 1936 and 15.7 per cent in the class of 1937. The number of reactions during the past three years was greatly reduced and the few reactions that did occur were of such a mild nature that very little time was lost off duty. We believe that

TABLE 1.—*Number of Nurses by Class Years, the Number Tested, and the Results of the Dick Test Made When They Entered Training*

Class Year	Number of Nurses in the Class	Number Tested	Number Dick Negative	Number Dick Positive
1925	34	21	14	7
1926	35	33	8	25
1927	23	22	6	16
1928	32	32	13	19
1929	34	34	14	20
1930	39	39	15	24
1931	31	31	16	15
1932	35	35	14	21
1933	41	41	18	23
1934	43	43	21	22
1935	38	38	19	19
1936	31	31	12	19
1937	39	39	20	19

TABLE 2.—*Number and Percentage of Nurses Developing Reactions After the Injections of Toxin in Conjunction with the Method Used*

Class Year	Number of Nurses Receiving Injections	Number Showing Reactions After Injections	Percentage of Nurses Showing Reactions	Method Used
1926	25	3	12.0	That advocated by the Dicks
1927	16	1	6.2	That advocated by the Dicks
1928	19	1	5.2	That advocated by the Dicks
1929	20	3	15.0	That advocated by the Dicks
1930	24	9	37.5	That advocated by the Dicks
1931	15	12	80.0	That advocated by the Dicks
1932	21	21	100.0	That advocated by the Dicks
1933	23	14	60.8	Began splitting some of the doses
1934	22	12	54.5	Divided a larger number of the doses
1935	19	5	26.3	Our modification with 10 doses
1936	19	2	10.5	Our modification with 10 doses
1937	19	3	15.7	Our modification with 10 doses

9. This is the fourth time a bacillus of this sort has been isolated from blood cultures in a little over a year. All have been from gynecologic or obstetric cases in which fever followed operation or delivery. One of these strains has been subcultured for over a year but still refuses to grow on an ordinary blood agar plate.

From the Pediatric Division of the Department of Medicine of the Evanston Hospital and Northwestern University.

this improvement was due to the more gradual approach to the final dose of 80,000 skin test doses.

In our modification the individual is actively immunized by a series of ten injections of the scarlet fever streptococcus toxin. The initial dose is 150 skin test doses and at weekly intervals the amount of toxin in each successive dose is doubled, with the exception of the fifth injection. Whenever reactions occurred, the succeeding dose was increased only 50 per cent or even less to avoid such occurrences. Later, in some of these cases the doses could again be increased 100 per cent. In some cases less reaction occurred when the injections were given at intervals of two weeks. In this way the nurses were immunized with a minimum of disturbance or loss of time off duty. The final injection is 80,000 skin test doses.

Previous to the use of this modification, 80 per cent of the nurses in the class of 1931, and 100 per cent of those in the class of 1932 receiving the usual injections of toxin in the five doses, developed reactions. This was manifested in some by only one symptom, such as headache or vomiting, in others by sore throat, vomiting, rash, joint pains or other conditions in various combinations.

To determine the effectiveness of this modification as compared to the usual method of five injections, the Dick test was repeated a few weeks after the last dose of 80,000 skin test doses was given. As will be noted in table 4, 40 per cent in the class of 1929 were rendered Dick negative after the first set of injections. However, at this time the amount of toxin injected was less than is now given in the usual five injections. With the modification described, 100 per cent of those injected in the class of 1935 were rendered Dick negative after the first set of injections. In the class of 1936 with the same method, the percentage was 78.9, and in the class of 1937 again with the same procedure the percentage was 84.2. As is well known, some individuals develop their immunity with more difficulty than others. For the thirteen classes under consideration with a total of 249 nurses receiving these injections of toxin, 184, or 73.8 per cent, showed a negative Dick test after the first set of injections were completed and sixty-five nurses, or 26.2 per cent, were Dick positive. After receiving extra injections of the toxin, thirty-eight nurses of the latter group became negative to the Dick test. This increased the number actively immunized, as shown in table 4, to a total of 222 nurses, or 89.1 per cent.

For the nurses in the classes of 1925 and 1926 the records are incomplete and the results are not known for eleven nurses. Since that time fifteen nurses of those showing a positive Dick test after the first set of injections dropped out of training before their active immunity could be completed. By subtracting these twenty-six from the 249 nurses there remain 223 nurses with complete records, as shown in table 5. Of this number 222, or 99.5 per cent, were completely immunized as shown by a negative Dick test. The exception was one nurse of the class of 1934, who was sick in bed for two weeks after an injection of 8,000 skin test doses. Another attempt to immunize this nurse resulted in an illness of several days' duration and further attempts were abandoned.

TABLE 3.—*Various Symptoms of the Reactions and How They Increased in Number* *

Class Year	Number of Nurses Receiving Injections	Number Showing Reactions	Symptoms of Reactions After Injections of Scarlet Fever Streptococcus Toxin: General Malaise	Chills	Headache	Sore Throat	Backache	Body Aches	Nausea	Rash	Fever	Vomiting	Painful Local Reaction	Diarrhea	Weakness	Stiff and Painful Joints	Total
1926	25	3	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3
1927	16	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1928	19	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1929	20	3	1	0	0	0	0	1	0	0	0	1	0	0	0	0	3
1930	24	9	3	0	0	1	0	0	0	0	0	0	3	0	1	1	9
1931	15	12	5	5	5	0	2	0	5	2	3	1	7	1	0	3	39
1932	21	21	10	8	15	5	12	4	2	7	5	0	15	1	1	8	91
1933	23	14	4	7	4	1	7	5	4	1	5	3	8	0	1	3	55
1934	22	12	3	3	3	0	0	4	3	0	2	1	2	0	0	1	22
1935	19	5	5	0	0	0	0	0	0	0	0	0	4	0	0	0	9
1936	19	2	1	0	1	0	0	0	0	0	1	0	0	0	0	1	4
1937	19	3	0	0	1	0	0	3	1	1	0	0	0	0	0	0	6

* So that all the members of the class of 1932 who were receiving the injections of toxin showed reactions; also the diminution in the number of reactions that has occurred with the more recent classes.

TABLE 4.—*Number of Nurses by Classes Who We re Dick Positive When They Entered Training* *

Class Year	Number Dick Positive	Dick Negative After First Set of Injections: Number	Dick Negative After First Set of Injections: Per Cent	Number Dick Negative After Extra Injections	Total Percentage Made Dick Negative	Dick Tested 1 Year Later: Number Tested	Dick Tested 1 Year Later: Negative: Number	Dick Tested 1 Year Later: Negative: Per Cent	Comment
1925	7	4	57.1	Not recorded	....	..	..	....	Records incomplete
1926	25	16	64.0	1 recorded	....	..	..	....	Records incomplete
1927	16	8	50.0	6	87.5	..	..	....	2 dropped out
1928	19	10	52.1	3	68.4	..	..	....	6 dropped out
1929	20	8	40.0	7	75.0	..	..	....	5 dropped out
1930	24	17	70.8	7	100				
1931	15	11	73.3	4	100				
1932	21	18	85.7	3	100				
1933	23	21	91.3	2	100	21	17	73.9	
1934	22	21	95.4	..	...	21	17	73.9	1 not immunized
1935	19	19	100	..	...	19	17	89.9	
1936	19	15	78.9	4	100	18	18	100	
1937	19	16	84.2	1	89.4	..	..	....	2 dropped out

* The number and percentage that were made Dick negative after the first set of injections of the toxin was completed, the number who after extra injections of the toxin became Dick negative, and the total percentage made negative to the Dick test. Beginning with the class of 1933, this table also shows the number of nurses who were again Dick tested one year after being actively immunized, and the number and percentage that retained their immunity as shown by this retest.

With the idea of determining the duration of the immunity to scarlet fever produced by the injections of toxin, one year after these nurses were actively immunized they were retested by classes with another Dick test. This retest was initiated in 1931 with the class of 1933. Of the members of this class as shown by table 4, 73.9 per cent retained sufficient immunity after one year to give a negative Dick test; 73.9 per cent in the class of 1934, 89.9 per cent in the class of 1935 and 100 per cent in the class of 1936 were negative to this test. At the present time it is too early to carry out this procedure with the class of 1937. It may be possible that with the increase in the total amount of toxin injected with this modification the resulting immunity to scarlet fever, as shown by a negative Dick test, will be more lasting in a larger number of individuals. This can be determined only with further study.

To determine the effectiveness of the active immunization as described in preventing an individual from actually developing scarlet fever, I have looked through the records and found that since 1920 ten student nurses have contracted scarlet fever while in training. These occurred as follows: two in 1921, one in 1922, two in 1923, one in 1924, three in 1925 and one in March 1926. The first six of these cases of scarlet fever occurred before the Dick test was adopted. The result of the Dick tests for the next three cases was not recorded. The last mentioned nurse had a positive Dick test on entering training, and after the first set of injections the Dick test was again positive. This was followed by additional injections of toxin. After these had been given, the Dick test was repeated and was positive.

TABLE 5.—*Number Actively Immunized as Shown by a Negative Dick Test*

Class Year	Corrected Number of Initial Positive Dick Tests	Number Eventually Made Dick Negative	Per Cent Rendered Dick Negative	Comment
1925	4*	4	100	
1926	17*	17	100	
1927	14†	14	100	
1928	13†	13	100	
1929	15†	15	100	
1930	24	24	100	
1931	15	15	100	
1932	21	21	100	
1933	23	23	100	
1934	22	21	95.4	1 reacted severely
1935	19	19	100	
1936	19	19	100	
1937	17†	17	100	

* This number was obtained by subtracting the number of nurses having incomplete records from the number showing a positive Dick test at the time they entered training.

† This number was obtained by subtracting the number of nurses who dropped out of training before their immunization was complete from the number showing a positive Dick test when they entered training.

Since March 1926 no student nurse has developed scarlet fever, although the care of patients with scarlet fever is included in their course of training. It would appear that the determination of immunity to scarlet fever by means of the Dick test and active immunization of the susceptible individuals are of definite value. Many have raised the objection that active immunization is accompanied by a large number of reactions. I am herewith presenting a method that I believe will make possible this active immunization with a minimum number of reactions.

CONCLUSION

By means of a more gradual approach to the final dose of 80,000 skin test doses, the active immunization with the scarlet fever streptococcus toxin can be accomplished with a marked reduction in the number and severity of these reactions.

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TULAREMIA

REVIEW OF LITERATURE OF CASES CONTRACTED BY INGESTION OF RABBIT AND THE REPORT OF ADDITIONAL CASES WITH A NECROPSY

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Francis,[1] in reviewing the modes of infection with Bacterium tularense, notes three reports of infection through the ingestion of uncooked or partially cooked rabbit. One of these instances was reported by Freese, Lake and Francis,[2] one by Crawford,[3] and the third report is ours. It is our intention in this paper to report in detail the two cases that have come under our observation.

LITERATURE

Since the time of the report by Francis, Beck and Merkel [4] have added an instance of an infection of this nature. The report by Beck and Merkel is the only report of this nature in which necropsy data are given.

Crawford [3] reports an instance in which seven members of a family had the disease. The father and grandmother were not affected. The children found a dead rabbit, which they cleaned, cooked and served for an evening meal. When first seen by the physician four days later they staggered about, vomited and complained of pain. There were no ulcers or skin involvement. They all had temperatures between 103 and 105 F., and two died. Five whose blood was examined showed agglutinins for Bacterium tularense in dilutions of 1:320, 1:640, 1:1,280, 1:2,560 and 1:2,560. Submaxillary nodes were enlarged in some, but no lymph nodes elsewhere were affected and only one patient had conjunctivitis.

Freese, Lake and Francis [2] described four cases with three deaths in a family after eating a rabbit that was killed by a dog. The onset in all cases was sudden. In one there were nausea, headaches and chills. Three patients vomited and one had convulsions. Within twenty-four hours after onset the axillary temperature was between 103 and 104 F. Conjunctivitis and swelling of the lymph nodes were present. Washings made from swabs of the nose and throat produced tularemia in a guinea-pig. Necropsies were not permitted.

Beck and Merkel's [4] case was that of a man, aged 61, having a low basal metabolic rate and occasional glycosuria. After shooting a rabbit and dressing it, he ate some of the partially cooked rabbit. The next day he

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1. Francis, Edward: Tularemia, Am. J. Nursing **34**: 1-5 (Jan.) 1934.
2. Freese, H. L.; Lake, G. C., and Francis, Edward: Four Cases of Tularemia (Three Fatal) with Conjunctivitis, Pub. Health Rep. **41**: 369-372 (Feb. 26) 1926.
3. Crawford, Monroe: Tularemia from Ingestion of Insufficiently Cooked Rabbit, J. A. M. A. **99**: 1497-1498 (Oct. 29) 1932.
4. Beck, H. G., and Merkel, W. C.: Tularemia: Fatal Case of Typhoid Form Caused by Ingestion of Rabbit: Autopsy Report, South. M. J. **28**: 422-438 (May) 1935.

felt sick and had an insatiable thirst. All the initial symptoms became gradually worse, he became profoundly toxemic, and a low muttering delirium developed. The temperature reached 105 F. on the fifth day. Physical examination showed no cutaneous lesions and no enlargement of the superficial lymph nodes. The liver extended four fingerbreadths below the costal margin, and the spleen was just palpable.

The lungs were clear except for some dulness over the left base posteriorly. The white count rose from 6,325, 88 per cent of the leukocytes being polymorphonuclear cells, to 21,250, 66 per cent of the leukocytes being polymorphonuclear cells. The blood sugar was 140 mg. per hundred cubic centimeters. The stools were positive for occult blood.

At necropsy the viscera were edematous and congested. The mesenteric and epigastric lymph nodes as well as those along the diaphragm and head of the pancreas were enlarged and contained large areas of necrosis. The liver was studded with discrete yellowish gray areas. The spleen was enlarged, and areas of necrosis were found. Small ulcers were found in the stomach and ileum. The liver and pancreas showed hemochromatosis. In the lungs there were no lesions except infarcts. Guinea-pigs injected with the tissues developed tularemia.

REPORT OF CASES

CASE 1.—*History.*—A white man, aged 44, was admitted to the Duke Hospital Nov. 3, 1932, with delirium and a high fever.

One week before admission the patient, after having consumed a large quantity of whisky over a period of several days, went hunting with a Negro (patient 2). They killed a rabbit, which they cleaned, cooked and ate. No information could be obtained as to the condition of the rabbit when it was killed or as to how it was killed. It is presumed that the rabbit was not well cooked. About eight hours later the patient complained of pain in the left side of the chest, became feverish and had a severe chill. On the following day a profuse diarrhea without blood or mucus ensued, and the fever continued. Three days later he became stuporous and irrational.

On admission to the hospital the temperature was 40.3 C. (104.5 F.), the pulse 120 per minute, respirations 32 per minute, and blood pressure 120 mm. of mercury systolic, 80 diastolic. The patient was well developed. Respiration was rapid and there was an expiratory grunt. The accessory muscles of respiration were not used. He was comatose and the skin had a peculiar dusty red color. The pupils were contracted and did not react to light. The lungs were resonant throughout. There were areas of tubular breathing and very coarse bubbling râles, which appeared and disappeared, owing apparently to the large quantity of mucus that obstructed the bronchi. The other observations were unessential. The red blood cell count was 4,300,000, hemoglobin 12.5 Gm., mean hemoglobin content 29.8×10^{-12} Gm. The white blood count was 9,300, 77 per cent of the leukocytes being polymorphonuclears. The blood Wassermann reaction was negative. The carbon dioxide combining power of the blood was 46.6 volumes per cent. The blood sugar was 113 mg. per hundred cubic centimeters and the nonprotein nitrogen of the blood 42 mg. Agglutination for Bacterium tularense was positive in a 1:640 dilution of serum.

Course in the Hospital.—The patient's high temperature of 40.3 C. was maintained until his death six days after admission and thirteen days after the onset of the disease. The pulse rate was relatively slow, ranging between 110 and 130. The respirations during the first four days ranged between 26 and 40. Tachypnea and dyspnea were marked during the last three days. On the morning of his death there were dulness and suppression of breath sounds at the right base. He became more and more cyanotic, and death occurred on the thirteenth day of illness.

Necropsy.—This was performed three hours after death. The body was warm. No cutaneous lesions were found. The superficial lymph nodes were not palpable. The peritoneal surfaces were smooth and glistening. The liver extended about 3 cm. below the costal margin. Both pleural cavities were filled with a yellow opaque material. At the point of the bifurcation of the trachea there was a large mass of lymphoid tissue about 10 cm. in diameter and about 6 cm. in length completely encircling the trachea and bronchi. On section it was seen to be composed of a large amount of necrotic and lymphoid tissue. This mass constricted the trachea and bronchi to about one third of its usual diameter. The pleural surfaces of the lungs were smooth and glistening. In the posterior portion of the right lower lobe was a firm mass measuring about 7 by 6 by 6 cm. On section this mass was necrotic. Nothing was seen in cross section of the remainder of the lung except extensive pulmonary edema and congestion. The bronchial mucosa was red. No ulcers were found in either the stomach or the intestine. The lymph nodes in the mesentery were not enlarged and showed no areas of necrosis. Examination of the kidneys, adrenals, heart, liver, pelvic organs, structures of the neck and bone marrow revealed no gross abnormalities.

Microscopic preparations made from the caseous portions of the lungs showed almost complete destruction of the usual lung architecture and replacement by a mass of débris composed of nuclear remnants, fibrin, and amorphous pink-staining material. Some fairly well preserved cells with pyknotic nuclei were seen. Sections taken from other portions of the lung revealed an interstitial pneumonia. The predominating cells were mononuclear, although some polymorphonuclear cells were seen. The mononuclear cells appeared to be of three types: lymphocytes, plasma cells and monocytes. Some mitotic figures were seen in these cells. The alveoli contained numerous macrophages, which had engulfed considerable débris. No thrombi and no endothelial proliferation were seen in the blood vessels. The lumen of the bronchi were filled as a rule with a large number of polymorphonuclear leukocytes. The splenic pulp was markedly congested and there was some increase in the white cell elements, with an occasional mitotic figure. The malpighian corpuscles were quite large, and an occasional one showed a small area of necrosis; however, the characteristic feature of the spleen was the presence of numerous focal areas of necrosis, which had no relation to the malpighian corpuscles. Scattered through the liver were seen numerous focal areas composed of small cells, which resembled Kupffer's cells. Intermixed with these were some pyknotic nuclei and what appeared to be cytoplasmic débris. A microscopic preparation of a hilic lymph node revealed large focal areas of necrosis scattered throughout the node. These areas appeared to have no definite position with regard to the structure of the node. They resembled tuberculous areas of necrosis except that there were no giant cells. The sinuses were packed with a large number of macrophages and considerable pigment. This pigment was probably from the lungs, as none was seen in sections of a node removed from the abdomen. A microscopic preparation of a lymph node removed from the hilus of the liver showed several extensive areas of necrosis but no giant cell formation. The sinuses contained a large number of mononuclear cells. The testes showed an absence of spermatogenesis. The nuclei of the cells lining the seminiferous tubules had undergone either pyknosis or karyorrhexis. The interstitial tissue was infiltrated with a few plasma cells. Sections of the pancreas, kidney, adrenal and bone marrow showed no changes of note.

Cultures of the blood, lymph nodes, spleen and testes were taken both on cystine agar and on the usual mediums without obtaining Bacterium tularense. A guinea-pig was injected with material from the lung and spleen. The animal died within twenty-four hours of a staphylococcic infection. Two additional guinea-pigs injected with blood and testicle show no evidence of tularemia either clinically or at necropsy.

The anatomic diagnosis was tularemia; focal necrosis in lymph nodes, spleen and lung; focal round cell accumulation in liver; interstitial monocytic pneumonia; lobular pneumonia; pulmonary emphysema.

CASE 2.—*History.*—A Negro farmer, aged 31, was admitted to Duke Hospital Nov. 3, 1932, in a lethargic condition. On the night of the hunting trip with patient 1 he was nauseated, vomited, and complained of abdominal soreness. He also had a chill and felt feverish. He had been weak since the onset

and had remained in bed. He had been frequently delirious and there had been some anorexia. November 1 there was another chill. There had been no cough or sputum since the onset of the disease. There was no history of a bloody diarrhea.

Examination.—On admission to the hospital the temperature was 39.8 C. (103.6 F.), pulse 120 per minute, respirations 32 per minute and blood pressure 152 mm. of mercury systolic, 110 diastolic. The skin was dry and hot. There was a coarse tremor of the tongue. The diaphragm was high on both sides, and there was a lag of the lower chest of the left side anteriorly. The breath sounds were harsh, with prolongation of expiration over the left side of the chest below the angle of the scapula. The breath sounds were suppressed at the left base posteriorly. There was a coarse tremor of the fingers of both hands. The upper reflexes were hypo-active, and knee and ankle jerks were absent. The red blood count was 4,300,000 and the hemoglobin was 13.7 Gm. The white blood count was 11,850, 76 per cent of the leukocytes being polymorphonuclears. The blood Wassermann reaction was negative. Repeated agglutination of the blood was negative for Bacterium tularense. The direct van den Bergh reaction was 2.7 mg. The blood nonprotein nitrogen was 120 mg. per hundred cubic centimeters. A blood culture was sterile and an examination of the spinal fluid showed no abnormalities. The urine had 3 plus albumin and many granular casts and leukocytes. The carbon dioxide combining power was 35.3 volumes per cent.

Course in the Hospital.—The temperature remained elevated above 40 C. (104 F.), with a parallel elevation of pulse and respiratory rates. The patient's lethargy finally deepened, and he died on the twelfth day after the onset and the fourth day in the hospital.

Necropsy was denied, but because of the history, the similarity with case 1, and the absence of physical signs to explain the morbid state, the diagnosis of tularemia was made.

COMMENT

Although we cannot prove that the rabbit eaten by the two persons whose cases we have reported had tularemia, it seems likely that the rabbit was weak at the time it was killed, as the hunters were probably too intoxicated to shoot a well rabbit. It is also likely that the animal was not thoroughly cooked, and Francis [1] has shown that the organisms may withstand some cooking and still be infective.

The mode of entry of the organism may have been through the intact skin, but it seems likely that the alimentary canal was the mode of entry. This is borne out by the fact that a lymph node from the hilus of the liver as well as the liver itself showed definite evidence of tularemic infection.

A diagnosis of systemic infection with tularemia was made in both cases because of the high fever, delirium and typhoidal state without physical signs. Such a diagnosis led to the agglutination tests and to more detailed histories. The agglutination test in case 1 and the history of the ingestion of rabbit meat appear to confirm the tentative diagnosis. Of especial interest is the fact that in the two cases of strikingly similar courses only one showed a positive agglutination to Bacterium tularense. This is not an unusual observation in typhoid.

It is interesting that no definite ulceration was found in the intestine as in the case of Beck and Merkel.[4] It does not, however, seem unlikely that the tularemia organisms can pass through the intact intestinal mucosa, as they have the ability to pass through the skin.

Vagal Inhibition.—Ventricular slowing for a short period is certainly produced by vagal inhibition; this inhibition is a common occurrence, for it is the main cause of fainting attacks. —Dr. Maurice Campbell, F.R.C.P., quoted by Fisher, Alexander: Aphorisms in Clinical Medicine, *Canad. J. Med. & Surg.* **77**:166 (June) 1935.

ACUTE, FATAL CORONARY INSUFFICIENCY

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Any person with disease of the coronary arteries may die suddenly. By sudden cardiac death is meant cessation of the heart beat within a few minutes after the onset of acute failure and at a moment when its occurrence was not anticipated. The event does not permit of more precise definition. In a recent compilation of statistics, Hamman [1] found that 91 per cent of sudden deaths from natural causes result from diseases of the cardiovascular system, and that of deaths from sudden heart failure 65 per cent are due to disorders of the coronary arteries.

In a majority of instances, disease of the coronary arteries may be recognized clinically. Occasionally, no symptoms or signs are present. More often, when an unexpected attack as of pain or pulmonary edema appears to be the first evidence of disturbance, it is found on more careful inquiry that previous complaints of discomfort were present which were not regarded as having their source of origin in the heart. If an adult, either supposedly in good health or one who has suffered from anginal pain, suddenly falls dead, it is generally assumed that thrombotic occlusion of a coronary artery has occurred. Any acute episode observed in a patient known to have coronary artery disease is commonly ascribed to thrombosis. It is our purpose to call attention to a group of cases not unfamiliar to the pathologist but less well known to the clinician. These patients all have atherosclerosis of the coronary arteries and die suddenly. At necropsy, no fresh occlusion is found and no other anatomic lesion is present to explain the immediate cause of death. To the syndrome may be applied the designation "acute, fatal coronary insufficiency."

MATERIAL

The material was collected from the files of the department of pathology.[2] All cases of syphilitic aortitis, as well as those in which a complicating condition was present that might have been partly responsible for death, were excluded.[3] As a result of this procedure, the number of protocols available was considerably reduced and the records of twenty-four patients with atherosclerosis of the coronary arteries form the basis of this presentation. Three hundred and fifty-two other cases of coronary sclerosis, with and without thrombosis, serve as background for comparison. It must be borne in mind that, with two exceptions (table 1), the patients were sick enough to seek relief in the hospital. Study of a group of ambulatory cases, such as are seen, for example, by the medical examiner, might yield somewhat different results. The clinical histories seemed adequately com-

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1. Hamman, Louis: Sudden Death, Bull. Johns Hopkins Hosp. **55**: 387 (Dec.) 1934.

2. We are indebted to Dr. James W. Jobling, director of the department of pathology, for permission to use the necropsy protocols.

3. In one patient, aortic stenosis of unknown etiology was diagnosed clinically and found post mortem. Although this lesion predisposes to sudden death, as was recently pointed out by Marvin and Sullivan (Am. Heart J. **10**:705 [Aug.] 1935) the changes in the coronary arteries were so advanced that the case was included.

plete. The hearts were examined in routine fashion, carefully but without the aid of special technics. Several blocks of tissue were removed from each specimen for microscopic study. Special stains were employed when indicated.

CLINICAL PICTURE

With one exception, the patients were 50 years of age or over. One man, aged 43, presented such a remarkable picture that a detailed account of his case will be given later. Eleven of the twenty-four patients were in the sixth decade of life; the remainder were between 60 and 80 years of age. Males predominated in a ratio of 7 to 1. This is a higher proportion of males than was found in a group of 337 patients with coronary artery disease who came to necropsy in this hospital; namely, 2 to 1.[4] It appears that men with this condition are more likely to die suddenly than women. The ratio of white persons to Negroes was 11 to 1, the same as in the series just mentioned. Sudden death was just as common in the Negro as in the white person.

In twelve cases (50 per cent) the clinical diagnosis was erroneously given as coronary thrombosis. This is in accord with the usual practice referred to in an earlier paragraph. The remaining twelve cases were correctly diagnosed coronary sclerosis.

Four patients (16 per cent) were known to have diabetes mellitus, whereas of 297 patients with coronary sclerosis in whom death was gradual, only 2.3 per cent had diabetes. Three of the four diabetic patients suffered from gangrene; in two a leg had been amputated and, in the third a toe. On the basis of this small material it appears that the diabetic patient with coronary sclerosis, particularly if gangrene has occurred, is more likely to die suddenly than the nondiabetic patient with comparable changes in the coronary arteries. The possible relation of insulin to sudden death will be considered in the discussion.

TABLE 1.—*Manner of Sudden Death in Twenty-Four Cases of Coronary Sclerosis Without Thrombosis*

In bed, while awake	16
In bed during sleep	2
Sitting in chair	2
Found on floor of room	1
Collapsed in church	1
Collapsed on subway station	1
On bedpan	1

The duration of cardiac symptoms ranged from eighteen months to twenty years, with an average of seven years. This is a relatively long duration of life after the onset of symptoms in patients with coronary sclerosis. But in striking contrast to this average is the fact that in eight cases (33 per cent) there was a history of cardiac discomfort for less than six months, suggesting that the terminal process was rapidly progressive. In one instance, that of a 50 year old diabetic Negro, with advanced coronary lesions, no symptoms referable to the heart were noted.

The symptoms and signs prior to the final attack were, in the order of frequency: pain and congestive failure combined, ten cases; congestive failure only, nine; pain only, three; and paroxysmal auricular fibrillation only, one case. A story suggestive of previous coronary occlusion was obtained in three cases. The relatively uncommon occurrence of pain as the only source of complaint is noteworthy; more often the heart muscle was sufficiently impaired so that congestive failure also was present. Too much stress cannot be put on this circumstance, however, since the patients under consideration were sick enough for hospitalization. Unless occlusion has occurred, sufferers from coronary disease rarely seek bed care for pain alone; they enter the hospital because of congestive failure.

Hypertension was known to have been present prior to the final admission to the hospital in ten of thirteen cases; it was observed shortly before death in eight of nineteen patients, and in five cases no observations were made. A majority of the patients who died suddenly thus had an elevation of blood pressure at some time prior to their terminal illness. The lower incidence of hypertension shortly before death was in all probability due to the occurrence of cardiac insufficiency.

Electrocardiograms were taken on seventeen patients. In every instance there were deviations from the normal. Bundle branch block and a negative T wave in lead 1, or in leads 1 and 2, were observed seven times each; permanent auricular fibrillation, three times; paroxysmal auricular fibrillation, twice; complete auriculoventricular block and a prominent Q wave in lead 3, each once. Frequently a series of records was taken and in a number of such serial studies there were noted changes in the form of the ventricular complexes from day to day or from week to week, such as have been described as occurring after myocardial infarction.[5]

The manner of sudden death is given in table 1. Obviously, the circumstances attending the event will vary in hospital and ambulatory patients.

PATHOLOGY

The heart was almost invariably enlarged; only four specimens weighed under 400 Gm. The range was from 280 to 860 Gm., with an average of 563 Gm.

Intracardiac thrombi were present in three of the hearts, twice in the left ventricle and once each in the right ventricle and right auricle.

Infarcts of the myocardium were noted in eight cases. In four instances there were recent areas of infarction in the left ventricle; in eight, old scars were present in the left ventricle and once in the septum. In four of the hearts, both recent and healed infarcts were found.

The lesions in the coronary arteries were of varying degree; but in sixteen cases there were extensive calcification and stenosis of both right and left main trunks as well as of their larger branches. The changes predominated in the left anterior descending branch most frequently (twelve times). Next in order of frequency were the left circumflex, the right circumflex and the right or left main stems. In two cases the orifice of one coronary artery or of both was narrowed, though not occluded, by a plaque. Curiously enough, no myocardial fibrosis, gross or microscopic, was present in four cases; in two others this was described as slight, in spite of extreme sclerosis, calcification and even complete occlusion of some vessels. The remaining eighteen hearts all showed diffuse and well marked fibrotic changes.

In none of these hearts were thrombi found in any of the branches of the coronary system. Because serial sections were not made, a categorical statement that there had not occurred recent occlusion of one or more

4. Bruenn, H. G.; Turner, K. B., and Levy, R. L.: Notes on Cardiac Pain and Coronary Disease: Correlation of Observations Made During Life with Structural Changes Found at Autopsy in 476 Cases, Am. Heart J. **11**: 34 (Jan.) 1936.

5. Wilson, F. N.; Barker, P. S.; Macleod, A. G., and Klostermeyer, L. L.: The Electrocardiogram in Coronary Thrombosis, Proc. Soc. Exper. Biol. & Med. **29**: 1006 (May) 1932.

of the smaller and deeper radicles is not justified. That closure of twigs may have taken place is evident from the fact that old and recent infarcts were found in four cases. It is probable, however, that these resulted from atheromatous narrowing or occlusion of the nutrient arteries rather than from blockage by thrombi.

Lesions of syphilis were not recorded in a single protocol.

ABSTRACTS OF ILLUSTRATIVE CASES

Four histories and necropsy protocols are here briefly given in order to illustrate some of the types of cases encountered:

CASE 1.—J. K., a man, aged 43, was an advertising agent. The history was obtained from his wife, who stated that for a week he had complained of shortness of breath and for two days of precordial pain, aggravated by effort.

On the evening of his death he and his wife were on their way home from a cinema. On the 168th Street subway station he suddenly had agonizing substernal pain and collapsed. One of the hospital residents happened to be on the platform and had him carried into the Vanderbilt Clinic. His color was ashen and cyanosis was marked. The heart sounds were barely audible and the blood pressure could not be read. He died twenty minutes after the onset of acute symptoms.

At necropsy the heart weighed 280 Gm. There was no myocardial scarring, gross or microscopic. The left coronary artery contained several small, slightly raised yellow plaques for a distance of 1 cm. from its origin. At this point it bifurcated and the anterior descending branch, for a distance of approximately 2 cm. from the bifurcation, was almost completely obliterated by an old, calcified arteriosclerotic lesion. Below this, for an equal distance, the lumen was also markedly narrowed, being reduced to pinpoint size by eccentric thickening of the wall. No thrombus was present in any of the vessels. The circumflex artery contained numerous atheromatous plaques. The right coronary was narrowed considerably at its orifice, but beyond this its lumen appeared ample. At many points discrete and confluent gray and yellow plaques were present.

The myocardium of both ventricles was flabby. No infarcts were demonstrated. There was advanced arteriosclerosis of the aorta and its primary branches. Plaques in the aorta surrounded, and to a considerable extent narrowed, the orifice of each coronary artery.

Noteworthy in this case were the comparative youth of the patient, the short duration of symptoms, the absence of cardiac hypertrophy and, by contrast, the advanced lesions in the coronary arteries.

CASE 2.—W. J., a man, aged 53, a stationary fireman and dock hand, for twelve years had had dyspnea on effort and occasional abdominal pain. He was admitted to the hospital with congestive failure of marked degree. On examination, the heart was large and the aorta dilated. The blood pressure ranged from 110 to 130 mm. of mercury systolic and from 70 to 85 diastolic. The electrocardiogram showed a diphasic T wave in lead 1, and five days before death auricular fibrillation appeared. He died suddenly one month after admission, at a time when he appeared to be improving.

At necropsy the heart weighed 600 Gm. There were a few yellow intimal plaques in both main branches of the coronary arteries as well as in the aorta. Microscopically, hypertrophy of the muscle fibers was noted. In his final note, Dr. A. M. Pappenheimer stated that "the pathological study, as far as it has been carried out, offers no explanation for the sudden death."

The symptoms in case 2 extended over a period of twelve years and the heart was greatly enlarged. Whether hypertension had previously been present is not known. The coronary lesions were minimal; no other anatomic changes were present to account for the sudden end.

CASE 3.—J. F., a man, aged 57, a dentist, had had symptoms of congestive failure for two years but no cardiac pain. The heart was greatly enlarged. The blood pressure was 110 mm. of mercury systolic, 90 diastolic. The electrocardiogram showed bundle branch block. He was found dead in bed early one morning.

At necropsy, the heart weighed 720 Gm. There was a small thrombus in the apex of the left ventricle, and the anterior wall of this ventricle was infarcted. About 1 cm. from the orifice of the anterior descending branch of the left coronary artery was an atheromatous plaque about 3 mm. in diameter which almost completely occluded its lumen. The lumen beyond this point was normal. There were a few yellowish intimal plaques in both right and left main branches.

The final pathologic note by Dr. Pappenheimer read: "A somewhat unusual case of coronary disease in which a single plaque in the descending branch of the left coronary artery led to partial occlusion. The fibrosis of the myocardium appeared to be limited to the inner strata and was accompanied by the slow development of a mural thrombus of the left ventricle and progressive cardiac failure."

CASE 4.—F. H., a man, aged 54, a merchant, for twenty years had had paroxysmal cardiac pain, usually after effort. For the ten days preceding his admission to the hospital, pain had been almost continuous and he became short of breath. On examination, the heart was only slightly enlarged. Regular rhythm was interrupted by premature beats. The electrocardiogram showed bundle branch block, and the form of the complexes changed in later records. The blood pressure was from 90 to 110 mm. of mercury systolic and from 66 to 86 diastolic. There was no fever. The leukocytes ranged from 15,000 to 17,000; there was well marked polynucleosis. He died in his sleep.

At necropsy the heart weighed 450 Gm. There were thrombi in the right auricle. There was a recent infarct in the left ventricle, near the septum and an old area of infarction occupying about one fourth of the anterior wall, also near the septum. Both coronary arteries and their main branches showed extensive atheroma, calcification and narrowing of their lumens. There were numerous small atheromatous ulcers in the intima. The heart muscle showed extensive necrosis, degeneration and scarring, especially marked in the left ventricle. There were infarcts in the right lung.

The long story of paroxysmal heart pain with recent acute, persistent exacerbation in this case suggested the diagnosis of coronary thrombosis. The coronary lesions were advanced, indicating a progressive process over a long period of time and leading eventually to closure of portions of the coronary bed, with infarction of the myocardium and congestive failure. No thrombi were present in the coronary arteries.

COMMENT

Disease of the coronary arteries is the lesion most frequently associated with sudden cardiac death. Coronary arteriosclerosis is by far the commonest disorder of these vessels, having been found in 97 per cent of 762 proved cases.[6] Thrombosis is to be regarded as an episode in the course of sclerosis and is clearly not essential for sudden cardiac standstill.

TABLE 2.—*Incidence of Sudden Death in 376 Fatal Cases of Coronary Sclerosis and Thrombosis*

	Number of Cases	Sudden Death, per Cent
Total series	376	14.0
Sclerosis without thrombosis	337	11.8
Thrombosis present	39	33.3

The incidence of sudden death in 376 fatal cases of coronary sclerosis, with and without thrombosis, is shown in table 2. Of the total series, in 14 per cent death came suddenly. But of the cases of sclerosis without thrombosis, in only 12 per cent did death occur

6. Levy, R. L.; Bruenn, H. G., and Kurtz, D.: Facts on Disease of the Coronary Arteries, Based on a Survey of the Clinical and Pathologic Records of 762 Cases, Am. J. M. Sc. **187**: 376 (March) 1934.

in this manner; whereas in the cases in which a thrombus was present death was sudden in 33 per cent. The occurrence of thrombosis almost tripled the likelihood of a sudden end.

Yet the notion that coronary thrombosis is the immediate cause of death in these patients is erroneous. In thirty-nine hearts in which thrombotic occlusion of one or more coronary branches was found at necropsy, the descriptions of the thrombi were carefully scrutinized with respect to probable age. In but a single instance could the thrombus be characterized as fresh; that is, as having formed within several hours of death. The one exception was observed in a moribund, elderly man with marked secondary anemia due to a bleeding duodenal ulcer. In all the other cases the thrombus was at least several hours old. Usually the microscopic appearance indicated that it had formed at least several days before the heart ceased to beat; in many of the specimens, organization had occurred and in some canalization had already taken place. In short, thrombosis of a coronary artery is rarely, if ever, the immediate cause of sudden death. It increases the liability to sudden death by seriously reducing the functional capacity of an already impaired coronary bed.

TABLE 3.—*Incidence of Sudden Death in 376 Fatal Cases of Coronary Sclerosis and Thrombosis, in Relation to Character of Lesions and Previous History of Anginal Pain*

Character of Coronary Lesions	Total Number of Cases		Sudden Death, per Cent
Few to many plaques	200		10.0
With pain		42	16.6
No pain		158	8.2
Calcification and stenosis	103		12.5
With pain		24	25.0
No pain		79	8.8
Arteriosclerotic occlusion	34		20.5
With pain		15	26.6
No pain		19	15.7
Thrombosis present	39		33.3
With pain		21	52.2
No pain		18	11.0
Totals	376		14.0
With pain		102	27.5
No pain		274	9.1

In the light of this circumstance the question naturally arises as to how long after an attack of thrombosis patients may live. The clinical records were consulted, with a full knowledge that the description of symptoms may be misleading and that in a large number of cases the episode is asymptomatic. When recovery from a given attack did not take place, the average duration of life after the attack was two weeks in those patients who died suddenly, as against four weeks in those whose end came gradually, by progressive failure. In the group with sudden death the range in duration of life was from less than one day to fourteen months; in the gradual failure group the range was from three days to two years. It is during the first two weeks after an attack of coronary thrombosis that sudden death is most likely to occur. Rupture of the heart was not observed in any of our cases.

In the course of this study, two other factors bearing on the incidence of sudden death became apparent. These were the character of the coronary artery lesions and a previous history of anginal pain (table 3). In general, the more advanced the lesion, the more likely was the possibility of sudden death. But the end came quickly and unexpectedly, even in the presence of only a few intimal plaques. And in each of the anatomic groups into which the cases for purposes of analysis were arbitrarily divided, the incidence of sudden death was strikingly higher in the patients who gave a history of pain than in those who did not. Of the total series, 14 per cent died suddenly. In the group with pain, death was sudden in 27.5 per cent, in the group without pain, in only 9.1 per cent.

What is to be regarded as the mechanism of quick cardiac standstill? It is generally believed that ventricular fibrillation is the immediate precursor of sudden death. This may well be so; but it is a conclusion reached largely by inference from animal experiments, since actual graphic records of the final heart beats in man have been obtained in only a few cases.[7] The theory of vagus inhibition, championed by Allbutt,[8] has received but little support.

The question as to what, in a given instance, may have induced ventricular fibrillation has not been answered. Since in all the cases described the presenting pathologic lesions were found in the coronary arteries, it seems reasonable to infer that, in some way, acute coronary insufficiency was brought about and that an inadequate supply of blood to the myocardium resulted in cessation of the heart beat. That sudden closure of a coronary artery can cause the ventricles to fibrillate has been known for many years.[9] But whether ventricular fibrillation or some other disturbance in cardiac mechanism occurred is, for the moment, of secondary importance.

In the presence of anatomically diseased coronary arteries, functional insufficiency may conceivably be brought about by throwing an added burden on the heart or by further curtailing the flow of blood through the coronary channels. In either event there results a disproportion between the amount of work that the heart is called on to perform and the quantity of blood that reaches the myocardium. The work of the heart may be increased by physical effort or by emotion.

Sudden death after sharp exertion, such as running for a train, is not an exceedingly uncommon event; in this series it is exemplified by the man who collapsed on the bedpan. Of greater popular interest is the story of the individual who drops dead following an intense emotional experience, be it joyful or painful. So, one reads of a person's unexpected death after he has learned of the passing away of a dear friend, on being reunited with a relative after years of separation, or on holding a royal straight flush in a poker game. One of our patients collapsed during a church service. Those who die during sleep may experience vivid emotions in their dreams. To awaken with the heart beating forcefully and rapidly after dreaming of a fight with a robber or of an exciting chase is a sensation known to most of us. Emotion causes a discharge of epinephrine.[10] Epinephrine stimulates the sympathetic nervous system and increases the work of the heart. In small doses it may cause ventricular fibrillation; in larger amounts it can arrest it.[11]

7. Penati, F.: Elektrokardiographischer Befund von Herzflimmern bei plötzlichem Herztod, Klin. Wchnschr. **12**: 1249 (Aug. 12) 1933. Hamilton, R. L., and Robertson, H.: Electrocardiographic Studies of the Dying Heart in Angina Pectoris, Canad. M. A. J. **29**: 122 (Aug.) 1933. Meyer, P.: Mort subite par fibrillation ventriculaire au cours d'une myocardite chronique enrégistrée à l'électrocardiographe, Arch. d. mal. d. coeur **27**: 1 (Jan.) 1934. Levine, S. A.: The Treatment of Acute Coronary Thrombosis, J. A. M. A. **99**: 1737 (Nov. 19) 1932. (Levine states in this paper that he has seen the records of one such case.)

8. Allbutt, T. C.: Diseases of the Arteries, Including Angina Pectoris, London, Macmillan & Company **2**: 466, 1915.

9. Cohnheim, J., and von Schultess-Rechberg, A.: Ueber die Folgen der Kranzarterienverschliessung für das Herz, Arch. f. path. Anat. u. Physiol. **85**: 503, 1881. Porter, W. T.: On the Results of Ligation of the Coronary Arteries, J. Physiol. **15**: 121, 1894.

10. Cannon, W. B.: The Emergency Function of the Adrenal Medulla in Pain and the Major Emotions, Am. J. Physiol. **33**: 356, 1914.

11. Dock, William: Transitory Ventricular Fibrillation as a Cause of Syncope and Its Prevention by Quinidine Sulfate, Am. Heart J. **4**: 709 (Aug.) 1929.

To explain sudden death in those who fall over while sitting quietly in bed, apparently serene in spirit, it is necessary to assume the existence of a nervous mechanism for which, as yet, final proof is lacking. We refer to spasm of the coronary arteries or, what is more likely, of the arterioles.[12] Conceivably, this could be induced by irritation of the vessel wall by a deeply penetrating lesion, such as an atheromatous ulcer, or by reflex stimuli from other parts of the body, which secondarily affected the nerve endings in the adventitia. The same mechanism may be responsible for death in those cases in which the heart shows minimal coronary lesions (case 2); for even when numerous atherosclerotic plaques are found at necropsy and at that time appear to cause local constrictions, the apparent narrowings in the lumen seen in the dead body may not have existed during life.[13]

As far back as 1923, Gigon [14] reported the death of a diabetic patient with cardiac failure after the third dose of insulin and warned against its use in persons with advanced heart disease. Not long after, Hetényi [15] noted that insulin hypoglycemia precipitated attacks of anginal pain. Middleton and Oatway,[16] among others, found changes in the form of the electrocardiogram during insulin shock. As a result of clinical observations and a review of the literature, Ernstene and Altschule [17] concluded that insulin places an added burden of work on the heart, both by causing hypoglycemia and by sympathetic stimulation. Insulin was being given to two of our diabetic patients, one having received an injection twenty minutes before death and the other eight hours before the unexpected end. To diabetic patients known to have coronary sclerosis, insulin should be given cautiously and in amounts carefully calculated to avoid shock.

With respect to digitalis, the evidence that, in therapeutic doses, it has an action predisposing to sudden death is not convincing. To induce ventricular fibrillation, large amounts, pushed to the point of toxicity, are necessary. In our cases, it was being given to thirteen patients during the period immediately preceding the end. To ten patients none was administered; in one instance no information on this point was obtained. Certainly, in the presence of congestive failure, it should not be withheld. And, on the basis of a considerable experience in giving this drug in maintenance doses to such patients over a period of years, there is reason to believe that, so administered, it has prolonged rather than shortened life.

After injection into cats, quinidine raises the threshhold for the induction of ventricular fibrillation by faradic stimulation.[18] In such experiments the heart is normal and the method of producing the arrhythmia artificial. In patients, Morawitz and Hochrein [19] believe that they have employed quinidine prophylactically with success in that the number of sudden cardiac deaths in the Leipzig clinic was diminished by giving 0.2 Gm. (3 grains) of this drug daily in all cases of heart disease. They particularly recommend its use in the presence of coronary sclerosis. But until it can be proved that ventricular fibrillation is the usual responsible disturbance and further evidence is adduced that quinidine, taken continuously in the small dosage advocated by these authors, actually lessens the likelihood of sudden death, its routine administration does not seem justified. Larger and presumably more effective doses may cause toxic effects.[20] Quinidine can induce, as well as prevent or abolish, ventricular fibrillation, especially if heart block is present.[21] It is a drug to be used with caution when there is a possibility that it may do harm.

One other feature relating to this group of cases deserves mention. In patients with coronary sclerosis, nonfatal attacks of different sorts and of varying degrees of severity occur. Some of these are unquestionably due to coronary thrombosis or to ischemic necrosis of the heart muscle resulting from an extreme degree of narrowing.[22] But there are other cardiac disturbances in which there is no subsequent fever, leukocytosis is absent and the blood presssure does not fall. The cardinal symptom may be pain, lasting longer than in the ordinary anginal paroxysm and requiring an opiate for its relief; or pulmonary edema or nocturnal dyspnea of the "asthmatic" type. Often there are showers of premature beats; occasionally transient auricular fibrillation or paroxysmal tachycardia is present. Not infrequently gallop rhythm appears or, if previously present, becomes accentuated. The electrocardiogram may alter during the paroxysm, as in an anginal attack,[23] or it may show no changes. If changes are observed they are of short duration, and the record reverts quickly to the form seen prior to the attack. Furthermore, there are no progressive alterations in successive records.

The rate of symptomatic recovery is characteristically rapid. Such relatively mild attacks may conceivably result from the closure of small coronary twigs.[24] But it seems probable that frequently they represent minor degrees of acute coronary insufficiency without occlusion and clinically may be regarded as intermediate between the ordinary bout of anginal pain or its equivalent and a fatal seizure. From the point of view of therapy, their recognition is of practical importance. For although after such an episode a period of bed rest is essential, the enforcement of a rigid regimen such as it prescribed after an attack of coronary thrombosis is, as a rule, not necessary.

SUMMARY

There is a group of patients with atherosclerosis of the coronary arteries to whom death comes suddenly and in whose coronary vessels, at necropsy, no fresh thrombus is found. The syndrome may be designated "acute, fatal coronary insufficiency."

The clinical and pathologic features of twenty-four cases falling into this category have been studied.

12. Leary, Timothy: Coronary Spasm as a Possible Factor in Producing Sudden Death, Am. Heart J. **10**: 338 (Feb.) 1935.
13. Stewart, J. D.; Birchwood, Eugene, and Wells, H. G.: The Effect of Atherosclerotic Plaques on the Diameter of the Lumen of the Coronary Arteries, J. A. M. A. **104**: 730 (March 2) 1935.
14. Gigon: Diabetes und Insulintherapie (Verhandl. med. Gesellsch., Basel), Klin. Wchnschr. **2**: 1670, 1923.
15. Hetényi, G.: Angina Pectoris während Insulinbehandlung, Wien. Arch. f. inn. Med. **13**: 95 (Sept.) 1926.
16. Middleton, W. S., and Oatway, W. H., Jr.: Insulin Shock and the Myocardium, Am. J. M. Sc. **181**: 39 (Jan.) 1931.
17. Ernstene, A. C., and Altschule, M. D.: The Effect of Insulin Hypoglycemia on the Circulation, J. Clin. Investigation **10**: 521 (Aug.) 1931.
18. Levine, H. D.: Effect of Quinidine Sulfate in Inhibiting Ventricular Fibrillation: An Experimental Study, Arch. Int. Med. **49**: 808 (May) 1932.
19. Morawitz, P., and Hochrein, M.: Zur Verhütung des akuten Herztodes, München. med. Wchnschr. **76**: 1075 (June 28) 1929.
20. Levy, R. L.: Clinical Studies of Quinidine: IV. The Clinical Toxicology of Quinidine, J. A. M. A. **79**: 1108 (Sept. 30) 1922.
21. Kerr, W. J., and Bender, W. L.: Paroxysmal Ventricular Fibrillation with Cardiac Recovery in a Case of Auricular Fibrillation and Complete Heart Block While Under Quinidine Sulfate Therapy, Heart **9**: 269 (Dec.) 1922. Davis, David, and Sprague, H. B.: Ventricular Fibrillation: Its Relation to Heart Block, Am. Heart J. **4**: 559 (June) 1929.
22. Büchner, Franz; Weber, Arthur, and Haager, Berthold: Koronarinfarkt und Koronarinsuffizienz, Leipzig, Georg Thieme, 1935.
23. Feil, Harold, and Siegel, M. L.: Electrocardiographic Changes During Attacks of Angina Pectoris, Am. J. M. Sc. **175**: 255 (Feb.) 1928. Parkinson, J., and Bedford, D. E.: Electrocardiographic Changes During Brief Attacks of Angina Pectoris, Lancet **1**: 15 (Jan. 3) 1931.
24. Levy, R. L.: Mild Forms of Coronary Thrombosis, Arch. Int. Med. **47**: 1 (Jan.) 1931.

Records of 352 other cases of coronary sclerosis, with and without thrombosis, have been similarly studied and used as a background for comparison.

In approximately 12 per cent of the fatal cases of coronary sclerosis without thrombosis, death occurred suddenly. If thrombosis had occurred, death was sudden in 33 per cent. The presence of thrombosis thus almost tripled the likelihood of sudden death. But thrombosis of a coronary artery was rarely if ever the immediate cause of death in these patients. It increased the liability to acute coronary insufficiency by further reducing the functional capacity of an already impaired coronary system.

Nonfatal attacks of various sorts in patients with coronary sclerosis may be regarded clinically as intermediate between the ordinary bout of anginal pain or its equivalent and a fatal seizure. It is probable that many of these attacks are due to minor degrees of acute coronary insufficiency without occlusion.

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DINITROPHENOL POISONING

WITH THROMBOCYTOPENIA, GRANULOPENIA, ANEMIA AND PURPURA COMPLICATED BY LUNG ABSCESS

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Granulopenia following the oral administration of alpha-dinitrophenol as a therapeutic agent in the treatment of obesity was first reported by Hoffman, Butt and Hickey[1] in April 1934. Since that time five similar cases[2] have appeared in the literature. We are reporting two additional cases because of several unusual features that are presented for the first time following dinitrophenol; namely, anemia, thrombocytopenia, purpura and lung abscess.

CASE 1.—*History.*—A woman, aged 35, complained of sore throat, dysphagia, fever, and general malaise on May 8, 1935. Her condition became worse and on May 14 she admitted having taken dinitrophenol, from 1½ to 3 grains (0.1 to 0.2 Gm.) daily, intermittently for the past year to reduce her weight. The only side effect was profuse sweating. For two weeks prior to the onset of the present illness she took 1½ grains (0.1 Gm.) daily, and lost about 7 pounds (3.2 Kg.).

The past history, family history and marital history were not essential. The menses occurred one week late followed by a scanty, intermittent, foul, bloody discharge at the onset of the present illness and persisted for about one month.

Examination.—The patient weighed 150 pounds (68 Kg.) May 8. The temperature was 101 F., the pulse rate 104, respiratory rate 24 and blood pressure 110 systolic, 90 diastolic. The skin was moist, clammy and pale. The tonsils were acutely inflamed and swollen, with a white grayish membrane. The soft palate, uvula and pharynx were acutely inflamed. There was a scanty, foul menstrual discharge. The remainder of the physical examination was negative.

May 14 the temperature was 104, pulse rate 130, the respiratory rate 20, the blood pressure 100 systolic, 70 diastolic. The skin over the chest and axilla showed purpuric spots. The patient was extremely ill. The tonsils were acutely inflamed, with a grayish membrane and ulcerations. The soft palate, uvula and pharynx were acutely inflamed. Blood count showed hemoglobin 62 per cent, red blood cells 3,320,000, white blood cells 900, polymorphonuclear neutrophils 0 per cent, eosinophils 6 per cent, mature lymphocytes 92.5 per cent, immature lymphocytes 1.5 per cent, platelets markedly diminished; red blood cells appeared normal on the smear. The urine showed some albumin, a rare cast, a few white blood cells and a few red blood cells. Throat smears showed numerous cocci and a few spirilla. A diagnosis of agranulocytic angina was made and pentnucleotide and liver extract therapy was started.

Progress.—From the 14th to the 19th the patient was semiconscious and irrational at times. The skin became dry, hard, waxy and warm following each injection of pentnucleotide. The temperature ranged from 103 to 98.2, the pulse 126 to 100, respiration 22 to 20. The purpuric spots on the skin disappeared, but the scanty menstrual flow continued. The ulcers and the membrane on the tonsils, the inflammation of the uvula, and the pharyngitis showed improvement. The temperature, pulse and respiration remained normal from the 19th to the 21st. May 22 the temperature and pulse began to rise, and the patient became very weak and pale and developed a dry cough. On the 27th she was given a transfusion of 350 cc. of whole blood and four hours later she developed a pain in the right scapular region and some increase in the cough. Five hours later, shock developed, which lasted for several hours. Portable x-ray films of the chest on the 28th showed an area of consolidation in the upper right lobe consistent with a lobar pneumonia. The patient's condition gradually became worse, fever and tachycardia continued, and two abscesses developed in the buttock and right thigh, which were incised and drained on the 24th. June 18, x-ray films showed an abscess in the upper lobe of the right lung. She was placed on a conservative regimen of bed rest and sedatives, following which the temperature, pulse and respiration became lower and on the 29th the abscess was half its original size. July 20, x-ray films showed a disappearance of the abscess, with a thickened interlobar septum between the upper right and right middle lobes. The patient's general condition is entirely normal at the present time except for an anemia, which has developed within the past month.

Therapy.—Local treatment for the throat consisted of salt and soda throat irrigations, sodium perborate and peroxide gargles. The throat was painted with mercurochrome and 10 per cent silver nitrate solution. A continuous ice collar was applied. From May 14 to May 24 she received from one to four daily, in all twenty-four, intramuscular injections of 10 cc. each of pentnucleotide and from one to two daily, in all thirteen, intramuscular injections of 3 cc. each of liver extract. May 27 a blood transfusion of 350 cc. of whole blood was given; June 4, 200 cc. of whole blood, and June 11, 200 cc. of whole blood. Elixer of terpine hydrate with codeine was used for the cough. Other drugs used were magnesia magma, cascara, morphine sulfate, acetylsalicylic acid, papaverine, digitalis, caffeine with sodium benzoate, epinephrine, atropine sulfate, solution of potassium arsenite, reduced iron, pentobarbital sodium, and compound tincture of benzoin steam inhalations. A mustard plaster was used over the right scapula. Local therapy for the abscesses in the right thigh and right buttock consisted of injections of streptococcus serum, and hot magnesium sulfate packs.

Laboratory Work.—Repeated urine examinations showed a moderately heavy trace of albumin, rare casts, a few white blood cells and a few red blood cells. Tests for bile were negative and for urobilinogen positive. Repeated sputum and throat smears and cultures revealed numerous white blood cells, numerous gram-positive cocci in groups and in chains, a moderate number of gram-positive diplococci, a few gram-negative bacilli and diplococci, and a moderate number of gram-positive bacilli, on one occasion a few spirilla, and on June 19 Streptococcus haemolyticus and viridans. The blood Wassermann reaction was negative. October 3 the sputum smear was negative for tuberculosis and guinea-pig inoculation was negative for tuberculosis. Blood examinations were as follows: May 14, hemoglobin 62 per cent, red blood cells 3,320,000, white blood cells 900, polymorphonuclear neutrophils 0 per cent, eosinophils 6 per cent, lymphocytes 92.5 per cent, immature lymphocytes 1.5 per cent, platelets decreased. The hemoglobin range was from 50 to 94 per cent, the red blood cell range from 2,570,000 to 5,020,000, the white blood cell

1. Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine, J. A. M. A. **102**: 1213 (April 14) 1934.

2. Bohn, S. S.: Agranulocytic Angina Following Ingestion of Dinitrophenol, J. A. M. A. **103**: 249 (July 28) 1934. Davidson, E. N., and Shapiro, Matthew: Neutropenia Following Dinitrophenol, with Improvement After Pentnucleotide and Leukocyte Cream, ibid. **103**: 480 (Aug. 18) 1934. Dameshek, William, and Gargill, S. L.: Report of Two Cases of Agranulocytosis Following the Use of Dinitrophenol, New England J. Med. **211**: 440 (Sept. 6) 1934. Silver.[11]

range from 900 to 13,600, the polymorphonuclear neutrophil range from 0 to 70.5 per cent, basophils 0.5 per cent, the eosinophil range from 1 to 7.5 per cent, metamyelocytes 1 per cent, the lymphocyte range from 20.5 to 92.5 per cent, reticuloendothelial cells 0.5 per cent, the immature lymphocyte range from 0.5 to 1.5 per cent, plasma cells 5.5 per cent, immature mononuclears 1 per cent, the mature monocyte range from 3.5 to 23 per cent, the large mononuclear and transitional cell range from 3 to 16.2 per cent, unclassified cells from 0.5 to 2.5 per cent, reticulocytes 0.2 per cent, the platelet range from 30,000 to normal. On blood smear, from May 14 to May 21 the red blood cells appeared normal; from the 22d to the 24th an occasional red blood cell showed polychromatophilia; on the 27th the red blood cells appeared normal. From June 9 to July 13 an occasional red blood cell showed polychromatophilia and slight variation in size. October 15, hemoglobin was 94 per cent, red blood cells 5,020,000, leukocytes 10,200, neutrophils 66 per cent, lymphocytes 20.5 per cent, large mononuclears 12 per cent, eosinophils 1.5 per cent. Blood count Jan. 9, 1936, showed hemoglobin 85 per cent, erythrocytes 3,500,000, leukocytes 12,000, lymphocytes 35 per cent, polymorphonuclears 58 per cent, eosinophils 3 per cent, basophils 1 per cent, basket cells 3 per cent, platelet groups normal. A stained smear showed the red blood cells normal in size, regular in shape and taking the stain evenly. No nucleated red blood cells were found. Platelets appeared normal in number.

CASE 2.—*History.*—A woman, aged 48, became acutely ill July 10, 1935, five weeks after she started taking dinitrophenol for the reduction of her weight. She took 1½ grains (0.1 Gm.) of dinitrophenol four times daily for one week and 3 grains (0.2 Gm.) twice daily for four weeks, and reduced her weight from 230 pounds (104 Kg.) to 215 pounds (97.5 Kg.). She noticed extreme warmth and sweating as side effects. July 10, sore throat, dysphagia, extreme malaise, sweating, headache, anorexia, and edema of both legs developed. She had abscesses of the tonsils twenty-two years before. An appendectomy was performed in 1922. A subtotal hysterectomy and left oophorectomy was done in 1927. Cholecystectomy for cholelithiasis was done in 1933. The father died of apoplexy, the mother died of abdominal cancer, and one sister died of cancer. Two children were living and well. Menstruation began at the age of 12 years and was regular up to 1927. No menses had occurred since the pelvic operation in 1927.

Examination.—July 11 the patient weighed 215 pounds (97.5 Kg.), her height was 5 feet 8 inches (173 cm.), the temperature was 102.8, the pulse 108, respiration 30, and blood pressure 144 systolic, 52 diastolic. The patient was acutely ill. The skin was moist and clammy. The tonsils, soft palate and pharynx were acutely inflamed. There was bilateral pitting edema of both legs. The remainder of the physical examination gave negative results except for abdominal operative scars.

Progress.—Blood count July 12 revealed hemoglobin 101 per cent, red blood cells 5,620,000, white blood cells 2,900, polymorphonuclear neutrophils 1 per cent, eosinophils 1 per cent, lymphocytes 82 per cent, transitionals and large mononuclears 16 per cent, platelets normal; the red blood cells showed slight variation in size. Slight polychromasia and basophilic stippling were noted. There was no immaturity of the white blood cells. There appeared to be a toxic depression of the granulocytes. A diagnosis of agranulocytic angina was made and pentnucleotide therapy was started. The temperature, pulse and respirations became normal, July 14, the patient showed rapid improvement, and she had entirely recovered on the 17th.

Therapy.—Local therapy to the throat consisted of salt and soda throat irrigations and a continuous ice collar. From July 12 to July 17 she received one or two daily injections, nine in all, of 10 cc. each of pentnucleotide. The only other drug used was acetylsalicylic acid the first day of her present illness.

Laboratory Work.—Urine examination showed a heavy trace of albumin, numerous white blood cells, and a few Trichomonas vaginalis organisms. July 13, throat smears showed gram-positive cocci singly and in pairs and chains. Small gram-negative bacilli were present. Throat cultures showed Streptococcus viridans and nonhaemolyticus predominating. The blood Wassermann reaction was negative. Blood examinations were as follows: July 12, hemoglobin 101 per cent, red blood cells 5,620,000, white blood cells 2,900, polymorphonuclear neutrophils 1 per cent, eosinophils 1 per cent, lymphocytes 82 per cent, transitionals and large mononuclears 16 per cent, platelets normal; the hemoglobin range from 91 to 118 per cent, the red blood cell range from 5,000,000 to 6,660,000, the white blood cell range from 2,900 to 9,400, the polymorphonuclear neutrophil range from 1 to 60 per cent, the eosinophil range from 0.5 to 4 per cent, myelocytes 5 per cent, the lymphocyte range from 29 to 82 per cent, the transitional and large mononuclear range from 2 to 18 per cent, and platelets from 126,000 to normal. On blood smear, from July 12 to July 15 the red blood cells showed slight variation in size, slight polychromasia and basophilic stippling. There was no immaturity of the white blood cells. There appeared to be a toxic depression of the granulocytes. From the 15th to the 22d the red blood cells appeared normal.

The following is a summary of the eight cases [3] of granulopenia following the administration of dinitrophenol:

SUMMARY OF CASES

1. All eight patients were women.
2. The age limit was from 18 to 48 years.
3. Dinitrophenol was used in every case within apparently nontoxic limits.[4]
4. Although other drugs were used prior to the onset of the granulopenia, no proved cases of acetphenetidin, quinine, caffeine, acetylsalicylic acid or phenobarbital as an etiologic agent have been reported.[5]
5. The most important prodromal symptoms occur from ten days to four months after the drug is started and consist of fever, sore throat and headache.
6. The most common signs and symptoms occur from one to eight days after the prodromal symptoms and consist of fever, tachycardia, increased respiration; hyperemia, ulceration, pain and swelling of the gums, pharynx, soft palate, uvula, tonsils, and the mucous membranes of the mouth; cyanosis, stupor, and extreme malaise.
7. In the cases in which recovery occurred, the white blood cells and the polymorphonuclear neutrophils responded to therapy in from one to three days, and a normal count was obtained in from six to twenty-six days.
8. The case of Davidson and Shapiro showed a moderate secondary anemia, which became normal one day after a blood transfusion. The blood platelet count was normal although their patient had a hemorrhagic appearance to the gums. Our case 1 showed a marked secondary anemia, a markedly diminished platelet count, and definite purpuric spots on the skin. Our case 2 showed a definite decrease in the platelet count without clinical evidence of purpura, and a normal hemoglobin and red blood cell count. The three other cases in which blood counts were taken revealed no anemia and either a normal or an increased platelet count.
9. Granulopenia accounts for two of the four fatalities following the use of dinitrophenol [6] from the recommended apparently nontoxic dose of from 3 to 5 mg. per kilogram of body weight.[4] "It is perhaps malignant neutropenia occurring during dinitrophenol medication that has aroused the greatest professional alarm." [7]
10. The five patients who received pentnucleotide recovered. One of the two patients who received

3. Hoffman, Butt and Hickey.[1] Bohn.[2] Davidson and Shapiro.[3] Dameshek and Gargill.[9] Silver.[11]

4. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: Actions and Uses of Dinitrophenol, J. A. M. A. **101**: 193 (July 15) 1933.

5. Council on Pharmacy and Chemistry: The Relation of Amidopyrine and the Barbituric Acid Derivatives to Granulocytopenia, J. A. M. A. **102**: 2183 (June 30) 1934.

6. Dameshek and Gargill.[9] Silver.[11] Masserman, J. H., and Goldsmith, Harry: Dinitrophenol: Its Therapeutic and Toxic Actions in Certain Types of Psychobiologic Underactivity, J. A. M. A. **102**: 523 (Feb. 17) 1934. Medicine and the Law: Death After Slimming Treatment, Lancet **1**: 489 (March 3) 1934.

7. Dinitrophenol in Obesity, editorial, J. A. M. A. **103**: 1950 (Dec. 22) 1934.

adenine sulfate died. The one patient who received only liver extract and blood transfusions died. As our second patient promptly recovered from pentnucleotide alone, the value of other forms of therapy such as liver extract, x-rays, leukocytic cream,[8] leukocytic extract, and blood transfusions are questionable, except of course for the treatment of secondary anemia as in our case 1. Local therapy for the throat and general supportive measures are helpful to make the patient comfortable but have no specific curative action.

11. The loss of weight from dinitrophenol was no more than one might expect from dietery measures alone. This corresponds to the opinion of Strang and Evans,[9] who state that the practical value of dinitrophenol as an aid in weight reduction is very questionable. Dunlop[10] states that it would appear that exceedingly toxic or even lethal doses of dinitrophenol would be required to ensure the same effect as that produced by diets of 1,000 calories.

12. Autopsy[11] revealed severe degeneration of the heart, liver and kidneys. This corresponds to the observations of Poole and Haining,[12] Tainter and Wood,[13] De Chatel and Motike[14] and MacBryde and Taussig.[15]

COMMENT

Cases of diffuse bone marrow depression following the use of dinitrophenol have not been reported, despite the close relationship of this drug to benzene. Other drugs containing the benzene ring are known both experimentally and clinically to produce anemia, thrombocytopenia, granulopenia and purpura. Selling[16] in 1910 first called attention to the peculiar selective depressant action of benzene on the hematopoietic apparatus. In 1916 he[17] stated that "benzol is a powerful leukotoxin. It destroys the white cells of the circulating blood, and the parenchymal cells of the hematopoietic organs. Myeloid tissue is injured more than lymphoid tissue, and corresponding to this, the polynuclear leukocytes of the circulating blood are more affected than the lymphocytes. The erythroblastic tissue of the bone marrow is destroyed, but the circulating erythrocytes are injured relatively little." Our case 1 illustrates the diffuse nature of the bone marrow depression as evidenced by anemia, thrombocytopenia, leukopenia and granulopenia. Our case 2 reveals the selective damage to the bone marrow as shown by the normal hemoglobin and red blood cell count, thrombocytopenia, leukopenia and granulopenia. The average red blood cell lives in the peripheral circulation from fourteen to thirty days or more; the length of life of the mature neutrophil that reaches the blood stream is from one to six days. It is obvious then that one should take complete blood and platelet counts for at least two to four weeks on all patients in whom a general bone marrow depression may be suspected, and in some cases, as shown by our case 1, blood counts should be taken for several months, as there may be some permanent damage to the erythroblastic tissues of the bone marrow. It might be advisable therefore to institute iron therapy as a prophylactic measure in these cases, before the onset of the anemia. Arsphenamine has produced granulocytic aplasia of the bone marrow as well as numerous cases of aplastic anemia.[18] Farley[19] states that the clinical picture presented by these patients varied according to the degree of bone marrow depression and according to the particular element or elements of the marrow affected. He states that the rarity of occurrences suggests a preceding weakness of the hematopoietic apparatus of the individuals affected. Bronfin and Singerman[20] postulate an idiosyncrasy which may be reflected in the entire hematopoietic system as an aplastic anemia or by selectivity, in any of its component parts, producing granulopenia or thrombocytopenic purpura as the case may be. Kracke[21] has been able to produce the clinical picture of agranulocytosis accurately in the experimental animal by the use of benzene, ortho-oxybenzoic acid and hydroquinone. Madison and Squier[22] report a series of fourteen cases of primary granulocytopenia which were directly preceded by the use of aminopyrine alone or in combination with a barbiturate. Experimentally, one rabbit given allylisopropylbarbituric acid and aminopyrine by mouth died on the thirteenth day with a complete absence of granulocytes in the peripheral blood and a marked anemia. They believe that the appearance of primary granulocytopenia following the use of such drugs may be the result of an allergic or anaphylactoid reaction. It is interesting to note that the common factor in all of the drugs mentioned is the benzene ring. The relationship between lung abscess in our case 1 and dinitrophenol cannot be established from one case but should be borne in mind as a possible untoward effect of this drug.

Kracke[23] states that the red blood cells in these cases are little affected except when the illness is prolonged. He also states that there is often a hemorrhagic diathesis due to absent or diminished blood platelets, and it is becoming evident that one cannot draw a hard and fast line between those cases showing neutropenia only and those showing the same condition complicated by diminished platelets, purpura, bleeding and so on. It is further evidenced that in some individuals only the myeloblastic tissues are affected, in some the thrombocytopenic tissues are affected, and in some the erythroblastic tissues are affected or that they may occur in combinations and variations in severity of any or all three.

CONCLUSIONS

1. Dinitrophenol is unpredictably toxic[24] except in the one case reported by Frumess[25] and the fact that

8. Strumia, M. M.: The Effect of Leukocytic Cream Injections in the Treatment of the Neutropenias, Am. J. M. Sc. **187:** 527 (April) 1934.
9. Strang, J. M., and Evans, F. A.: An Evaluation of Dinitrophenol as an Aid in Weight Reduction, J. A. M. A. **104:** 1957 (June 1) 1935.
10. Dunlop, D. M.: The Use of 2:4 Dinitrophenol as a Metabolic Stimulant, Brit. M. J. **1:** 524 (March 24) 1934.
11. Silver, Solomon: A New Danger in Dinitrophenol Therapy: Agranulocytosis with Fatal Outcome, J. A. M. A. **103:** 1058 (Oct. 6) 1934.
12. Poole, F. E., and Haining, R. B.: Sudden Death from Dinitrophenol Poisoning: Report of a Case with Autopsy, J. A. M. A. **102:** 1141 (April 7) 1934.
13. Tainter, M. L., and Wood, D. A.: A Case of Fatal Dinitrophenol Poisoning, J. A. M. A. **102:** 1147 (April 7) 1934.
14. de Chatel, A., and Motike, J.: Ueber die Gefahren der therapeutischen Anwendung des Alpha-dinitrophenol, Deutsches Arch. f. klin. Med. **176:** 700, 1934.
15. MacBryde, C. M., and Taussig, B. L.: Functional Changes in Liver, Heart and Muscles and Loss of Dextrose Tolerance Resulting from Dinitrophenol, J. A. M. A. **105:** 13 (July 6) 1933.
16. Selling, Laurence: A Preliminary Report of Some Cases of Purpura Haemorrhagica Due to Benzol Poisoning, Bull. Johns Hopkins Hosp. **21:** 33, 1910.
17. Selling, Laurence: Benzol as a Leukotoxin, Johns Hopkins Hosp. Rep. **17:** 83, 1916.
18. Dodd, Katharine, and Wilkinson, S. J.: Severe Granulocytic Aplasia of the Bone Marrow: Report of a Case Following Arsphenamine Treatment in Congenital Syphilis, J. A. M. A. **90:** 663 (March 3) 1928. Farley.[19] Bronfin and Singerman.[20]
19. Farley, D. L.: Depressed Bone Marrow Functions from Arsphenamines, Am. J. M. Sc. **179:** 214 (Feb.) 1930.
20. Bronfin, I. D., and Singerman, Isidor: Acute Aplastic Anemia Complicating Arsphenamine Therapy, J. A. M. A. **98:** 1725 (May 14) 1932.
21. Kracke, R. R.: Experimental Production of Agranulocytosis, Am. J. Clin. Path. **2:** 11 (Jan.) 1932.
22. Madison, F. W., and Squier, T. L.: The Etiology of Primary Granulocytopenia (Agranulocytic Angina), J. A. M. A. **102:** 755 (March 10) 1934.
23. Kracke, R. R.: A Review of Granulocytopenia (Agranulocytosis), J. Lab. & Clin. Med. **17:** 993 (July) 1932.
24. Poole and Haining.[12] Nadler.[28]
25. Frumess, F. M.: Allergic Reaction to Dinitrophenol, J. A. M. A. **102:** 1219 (April 14) 1934.

persons with chronic rheumatism, tuberculosis, alcoholism, renal disorders and hepatic disease seemed to have a lessened resistance.[26]

2. There is no known specific chemical antidote for dinitrophenol.[27]

3. In view of the rapidly increasing number of untoward effects of this drug, such as peripheral neuritis,[28] cataracts,[29] anemia, thrombocytopenia and purpura, as well as the convincing comprehensive report of the Council on Pharmacy and Chemistry for not accepting this drug in New and Nonofficial Remedies,[30] we feel that physicians should make every effort to discourage its use.

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THE PREVENTION OF HYPOCHROMIC ANEMIA IN PREGNANCY

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Within the past decade the high incidence of anemia in pregnancy has become generally appreciated. Although the work of Strauss and Castle,[1] Dieckmann and Wegner [2] and others has indicated that a 10 to 20 per cent lowering of the hemoglobin during pregnancy may be the result of hydremia and not represent true anemia, approximately 25 per cent of otherwise normal women are definitely anemic following parturition.[3] The vast majority of such patients have anemia of the hypochromic variety,[4] which has come to be associated with a virtual deficiency of available iron for purposes of blood regeneration within the body. Strauss and Castle,[5] Davies and Shelley [6] and other clinicians have shown that in pregnancy this anemia is to be associated not only with the presence of the fetus but also with gastric secretory defects and inadequate diets and usually may be completely relieved equally well during as after gestation by the administration of inorganic iron salts in suitable dosage. As a result of modern studies, the routine administration of iron to all pregnant women as a prophylactic measure has been advocated.[7] Our purpose in this communication is to present an adequately controlled series of observations on 200 pregnant women, 100 of whom received prophylactic iron therapy.

Several investigators have undertaken the problem of prophylaxis of anemia in pregnancy. Jerlov [8] treated 120 moderately anemic pregnant women with iron and noted improvement in 90 per cent. Mackay [9] observed that thirty women who had been treated with iron both during and after pregnancy had 4.8 per cent higher hemoglobin four months after confinement than a control group of twenty-nine similar women not treated. Davis and Walker [10] administered six different proprietary preparations to a total of eighty-nine pregnant women. No matter what preparation was used, the treated patients showed higher average hemoglobin values than the control patients. The number of patients in each group was so limited, however, that conclusions drawn from the results were not statistically significant. Several of the proprietary remedies employed contained only traces of iron. It is doubtful whether any of the patients received an amount of iron that would be considered adequate in the treatment of hypochromic anemia. Richter and his associates [11] administered a proprietary mixture of equine liver extract, glycerated iron and hemoglobin to thirty-eight pregnant women. The average hemoglobin of this group of women was 5.5 per cent higher than that of an untreated group. Irving [12] administered iron, iron and copper, and whole liver to pregnant women in successive two month periods during pregnancy. His failure to consider the changes in hemoglobin that occur during such successive periods of pregnancy, as a result of plasma volume changes, unfortunately makes his data of little value.

METHODS

The 200 normal pregnant women studied presented themselves for routine care in the antepartum clinic when they were from three to seven months pregnant, the average being 162 days. On arrival, each patient was assigned a number in order. Blood for examination was withdrawn without stasis from an antecubital vein, and a careful dietary history was taken. Every woman was given a bottle containing 100 coated tablets, with instructions to take one tablet after each meal and to return the bottle and unused tablets at the next visit to the clinic. At all subsequent visits a fresh bottle of 100 tablets was given the patient. Unknown to her, the number of tablets remaining unused at each visit was counted and from these data the actual amount of medication taken was calculated. Patients who had been assigned odd numbers received tablets containing 0.2 Gm. (3 grains) of ferrous sulfate; patients with even numbers received tablets that were identical in appearance and size but contained lactose and no ferrous sulfate.[13] Women who took less than one of the prescribed three tablets daily were excluded from the two series, as were also those in whom sepsis or hemorrhage developed, whether during gestation, parturition or the puerperium. The average daily intake of iron of the treated group was 0.5 Gm. (7½ grains) of ferrous sulfate.

At each visit and again one week after parturition, venous blood was withdrawn for examination. Hemo-

26. Perkins, R. G.: A Study of Munitions Intoxications in France, Pub. Health Rep. **34**: 2335 (Oct. 24) 1919.
27. Poole and Haining.[12] Tainter, M. L.: Treatment of Acute Dinitrophenol Poisoning, J. A. M. A. **104**: 1071 (March 30) 1935.
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30. Council on Pharmacy and Chemistry, Reports of the Council, J. A. M. A. **105**: 31 (July 6) 1935.

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From the Tufts and Harvard Medical services, Boston City Hospital, the Department of Preventive Medicine, Tufts College Medical School, and the Departments of Medicine and Tropical Medicine, Harvard Medical School.

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10. Davis, M., and Walker, E. W.: New England J. Med. **210**: 1315 (June 21) 1934.
11. Richter, O.; Meyer, A. E., and Bennett, J. P.: Am. J. Obst. & Gynec. **28**: 543 (Oct.) 1934.
12. Irving, F. R..: Am. J. Obst. & Gynec. **29**: 850 (June) 1935.
13. Smith, Kline & French, Philadelphia, kindly furnished the tablets of ferrous sulfate and the lactose tablets employed in this study.

globin determinations were performed at monthly intervals and one week after delivery by the Sahli method, with tubes so calibrated that 100 per cent was considered the equivalent of 15.6 Gm. of hemoglobin per hundred cubic centimeters of blood. Red blood cell counts were performed with pipets and counting chambers certified by the U. S. Bureau of Standards.

RESULTS

Initial Examinations.—Initial examinations of the two groups of women were made at approximately the same period of pregnancy. The average time after the last menstruation when the treated group first was observed was 160 days, and the untreated group, 164 days.

Forty-six of the women treated with iron partook of diets evaluated as average, which contained meat and vegetables, at least five times a week. Forty-eight women of the control group had similar diets. Seven of the treated women had better than average diets, as did thirteen of the control group. Forty-seven of the treated women and thirty-nine of the untreated women had had definitely poor diets. Thus it is apparent that there were no important differences in the diets of the two groups of women.

The average initial hemoglobin value of the 100 women of the control group was 75 per cent (11.7 Gm. per hundred cubic centimeters of blood) and of the

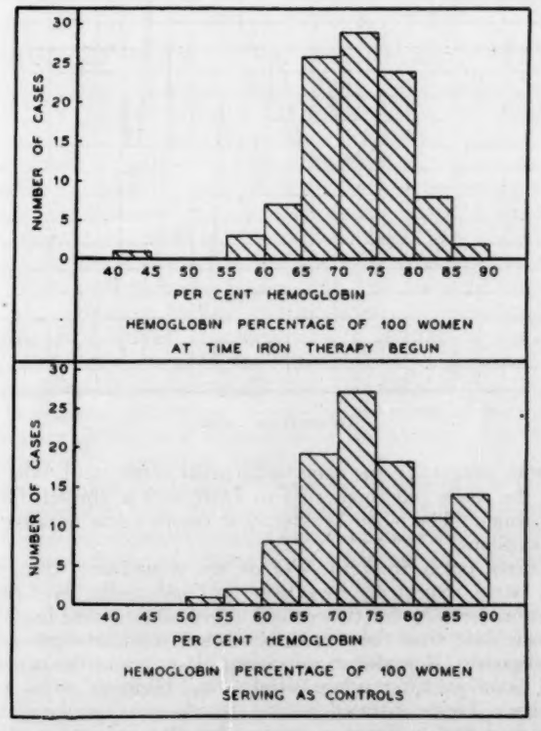
NUMBER OF CASES
PER CENT HEMOGLOBIN
HEMOGLOBIN PERCENTAGE OF 100 WOMEN AT TIME IRON THERAPY BEGUN
NUMBER OF CASES
PER CENT HEMOGLOBIN
HEMOGLOBIN PERCENTAGE OF 100 WOMEN SERVING AS CONTROLS

Chart 1.—Hemoglobin percentages in the sixth month of gestation.

treated group of 100 women was 73 per cent (11.2 Gm. per hundred cubic centimeters) (chart 1). The average initial red blood cell count of the control group was 3.88 million cells per cubic millimeter and of the treated group 3.72 million per cubic millimeter. There was thus no significant difference in blood levels between the two groups of women when they were first examined at approximately the beginning of the sixth month of pregnancy.

Postpartum Examinations.—The results of hemoglobin determinations performed one week post partum on each of the 200 women are presented in chart 2. At this time the average hemoglobin value of the 100 women who did not receive iron was 75 per cent (11.7 Gm. per hundred cubic centimeters), a figure that is in essential agreement with similar data obtained by Kühnel,[14] Strauss and Castle,[1] Dieckmann and Wegner,[2] and Bland, Goldstein and First.[3] Forty-five of these women had less than this amount of hemoglobin and twenty-four patients had less than 70 per

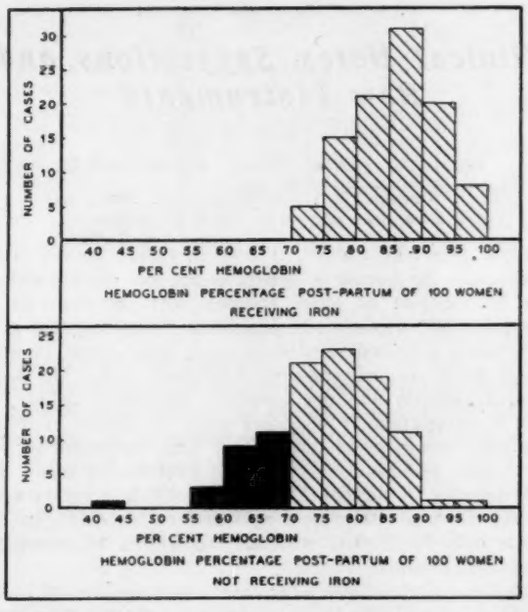
NUMBER OF CASES
PER CENT HEMOGLOBIN
HEMOGLOBIN PERCENTAGE POST-PARTUM OF 100 WOMEN RECEIVING IRON
NUMBER OF CASES
PER CENT HEMOGLOBIN
HEMOGLOBIN PERCENTAGE POST-PARTUM OF 100 WOMEN NOT RECEIVING IRON

Chart 2.—Hemoglobin percentages one week post partum. Solid columns represent patients with less than 70 per cent hemoglobin.

cent (10.9 Gm. per hundred cubic centimeters) hemoglobin and hence must be considered to be distinctly anemic.

The average postpartum hemoglobin of the 100 treated women was 85 per cent (13.26 Gm. per hundred cubic centimeters), or a gain of 12 per cent over their average values in the sixth month of gestation. Only five of these 100 women had less than 75 per cent hemoglobin and none had less than 70 per cent.

The average erythrocyte count post partum in the control group was 3.94 million per cubic millimeter and in the treated group 4.28 million per cubic millimeter.

COMMENT

In 1930, evidence drawn from a study of three cases was advanced[5] in favor of the theory that severe hypochromic anemia in pregnancy was due to a virtual deficiency of iron brought about by gastric secretory defects in the presence of fetal blood requirements. Subsequent studies[15] verified this theory and led to the suggestion that iron be employed as a prophylactic of hypochromic anemia in pregnancy. The data presented here unequivocally demonstrate that, in the absence of hemorrhage or sepsis, the daily administration of 0.5 Gm. of ferrous sulfate to women in the last trimester of pregnancy results in higher hemoglobin values than in untreated women.

SUMMARY

Two hundred women were studied during the last four months of pregnancy. Alternate patients were given 0.5 Gm. of ferrous sulfate daily. The others

14. Kühnel, Paul: Ztschr. f. Geburtsh. u. Gynäk. **90**: 511, 1927.
15. Strauss and Castle,[4] Davies and Shelley.[5]

received placebos. Of the 100 women given no iron, twenty-four had less than 70 per cent hemoglobin post partum. Of the 100 women given iron, none had less than 70 per cent hemoglobin post partum.

The conclusion is drawn that hypochromic anemia in pregnancy may be largely prevented by the routine administration of iron, especially in the latter months of gestation.

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Clinical Notes, Suggestions and New Instruments

RAT-BITE FEVER FROM FIELD MOUSE

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Rat-bite fever, or sodoku, is now a widely known disease. In most cases the disease is caused by the bite of rats and only rarely by the bite of other animals, such as dogs, cats or ferrets. In 1932 in Germany Jungbluth [1] reported that a boy, aged 9 years, who had been bitten by a field mouse, developed a disease which clinically resembled rat-bite fever. The demonstration of spirilla was not possible. Brüning [2] included this case in a compilation of sixty-five cases of sodoku in children as the only one in which the patient was not bitten by a rat. In 1932 also, Jenkinson and Jordan [3] published a report from North America of the development of rat-bite fever in a man, aged 56, who was bitten by a wild mouse; the diagnosis could be made only by clinical evidence; all efforts to demonstrate the causative organism failed.

We believe that the following case, which we studied in 1934, is the first in which the bite of a field mouse produced a typical rat-bite fever in which spirilla were demonstrated as the cause:

REPORT OF CASE

History.—May 30, 1934, a previously healthy schoolboy (T. E.), aged 14, was bitten on the left fourth finger by a wild field mouse that he had captured in a California hay meadow. The wound was small, bled freely, and in a few days healed without soreness or signs of inflammation. June 11, however, there was pain and slight swelling at the site of the bite, and there was a general feeling of malaise, headache, and a loss of appetite. June 14 the finger was incised, but no pus was obtained. The patient was admitted to Mills Memorial Hospital, San Mateo, Calif., June 17.

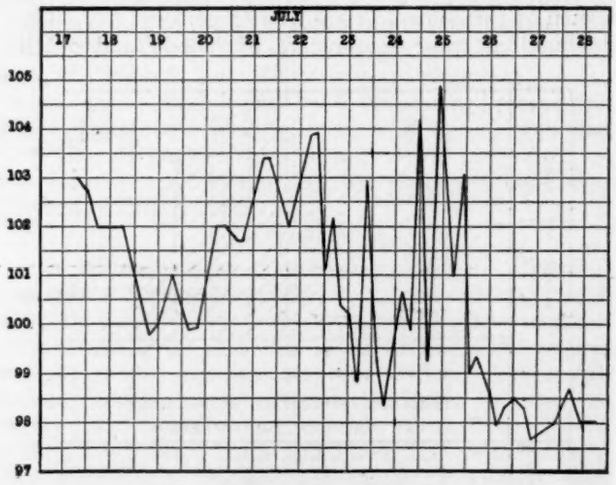
At the time of admission, he had a temperature of 103 F., pulse 110, respirations 20. His cheeks were flushed and he exhibited sporadic muscular twitching in the muscles of his face, abdomen and extremities. There were no abnormal manifestations aside from a soft blowing localized systolic murmur over the apex of the heart; and a grayish dry crust about 0.5 cm. in diameter, at the base of the left fourth finger, surrounded by considerable cellulitis. There was no fluctuation and the tenderness was slight. There were no signs of lymphangitis. The left epitrochlear glands were painful and were moderately enlarged. Removal of the crust left an ulcer 0.5 cm. deep, which did not bleed.

Clinical Course.—The temperature is given in the accompanying chart. Throughout the entire illness there were no subjective symptoms except headache, malaise and chills, as one would expect, with rise in temperature. June 20 the spleen was palpable for the first time 1 cm. below the costal margin. June 23 a small urticaria-like wheal was visible on the inner surface of the right thigh. The next day numerous slightly raised reddened areas, varying in diameter from 0.5 to 1 cm., appeared on the dorsal surface of the left forearm. During the next two days, similar widely scattered lesions appeared on the lips, cheeks, chest, thighs and lower portion of the legs. At the height of their development (which was during the third to the fourth day after the initial appearance of the rash) the skin lesions appeared as discrete, purplish red, indurated nodules, not painful, tender or itching.

Medication.—June 24, 0.15 Gm. of neoarsphenamine was given intravenously. June 26, 0.3 Gm. was given; June 28, 0.15 Gm. was given. Following the second dose, the rash disappeared rapidly and the temperature fell to normal. The patient left the hospital in June and appeared entirely well until July 16, when his temperature suddenly rose to 103 F. No skin lesions were manifest but there was slight generalized adenopathy. He was given 0.15 Gm. of neoarsphenamine. The next day his temperature rose to 105 F., and 0.3 Gm. of neoarsphenamine was given. The following morning his temperature fell to normal and remained so. July 19 he was again given 0.3 Gm. of neoarsphenamine and July 24 a final dose of 0.4 Gm., at which time he was apparently well and the adenopathy had almost entirely disappeared. He had no further relapses.

Laboratory and Bacteriologic Data.—On the sixth day after entry to the hospital, the urine showed a trace of albumin and a few hyaline casts.

There was no anemia. The leukocyte count on entry was 4,400; polymorphonuclears, 67 per cent; lymphocytes, 22 per cent; monocytes, 9 per cent; basophils, 1 per cent. Daily leukocyte counts were made and the total number of cells remained low with practically the same differential count until June 26, when the white cell count rose to 7,900 with a normal differential count. The blood Wassermann reaction was negative on two occasions.



Temperature curve

Cultures taken from the site of the wound and from the blood were repeatedly negative for pathogenic organisms. Agglutination tests for tularemia and brucelliasis were negative.

Tissue fluid from the wound, which was inoculated into mice, was negative. Repeated examinations of smears of the patient's blood examined after using Wright's and Giemsa's stains were negative. Twice, citrated venous blood was inoculated into white mice and guinea-pigs intraperitoneally and into a rabbit intravenously. June 23, a lymph node was removed from the left epitrochlear region. This was ground up and inoculated into white mice and guinea-pigs. Positive results were obtained only in the mice. In one mouse (gland) the organisms were found after fourteen days and in another (blood) after sixteen days, following daily darkfield examinations of the blood taken from the tail.

The parasites showed all characteristic features of Spirillum minus (Carter), which is identical with Spirochaeta morsus-muris described by the Japanese authors and generally accepted as the causative organism of rat-bite fever (sodoku). The darkfield illumination revealed the spirilla as having rigid bodies with rapidly moving bipolar flagella. The stained smears showed them to be from 2 to 5 microns in length with three to four waves.

The authors acknowledge assistance from the George Williams Hooper Foundation for Medical Research, University of California.

1. Jungbluth, E.: Eine der Sodoku (Rattenbisskrankheit) ähnliche Erkrankung durch Feldmausbiss, Jahrb. f. Kinderh. **134**: 85 (Dec.) 1932.
2. Brüning, H.: Sodoku (Rattenbisskrankheit) bei Kindern, Ergenbn. d. inn. Med. u. Kinderh. **44**: 1, 1932.
3. Jenkinson, H. R., and Jordan, C. F.: A Case of Rat-Bite Fever Caused by the Bite of a Wild Mouse, J. Iowa M. Soc. **22**: 31 (Jan.) 1932.

Blood of the positive mice was repeatedly transferred to white mice. The strain is still kept going (after one year). The incubation time has become shorter with successive passages and is now around five days, depending mostly on the number of injected organisms and the individual susceptibility of the animals.

It may be mentioned that not in one instance was Spirillum minus found in these mice before the experimental infection.

SUMMARY AND CONCLUSIONS

A boy, aged 14, was bitten by a wild field mouse and developed rat-bite fever. Venous blood and emulsified lymph node obtained at biopsy and injected into white mice revealed Spirillum minus. Cure was effected by the administration of neoarsphenamine.

Apparently healthy rats and mice may harbor spirilla, which are similar to and even identical with those demonstrated in rat-bite fever in man. Any bite by animals, particularly rodents, should be considered as a possible source for this disease. Prophylactic administration of neoarsphenamine may even be considered, and, in case of clinical evidence of the disease, neoarsphenamine should be administered immediately, as animal inoculations in our case were not found to be positive before the fourteenth or sixteenth day.

384 Post Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

INDUCTOTHERM (ONE TUBE) ACCEPTABLE

Manufacturer: General Electric X-Ray Corporation, Chicago.

In THE JOURNAL, May 11, 1935, page 1706, the acceptance of the General Electric Inductotherm (two tube) was published. Since then the General Electric X-Ray Corporation has designed a new unit, which is somewhat smaller but, according to the company's engineers, has the same power output. Instead of two tubes being used in this new machine, only one tube is employed; but it is much larger and more efficient, thus giving approximately the same power with the one tube that was formerly developed by two smaller tubes. In order to obtain this power, however, it is necessary to be more careful about the placement of the coil applicator.

The physical and electrical tests showed that the electrical equipment was reliable and met the requirements of the Council. The shipping weight is approximately 200 pounds. A schematic diagram of the circuit is shown.

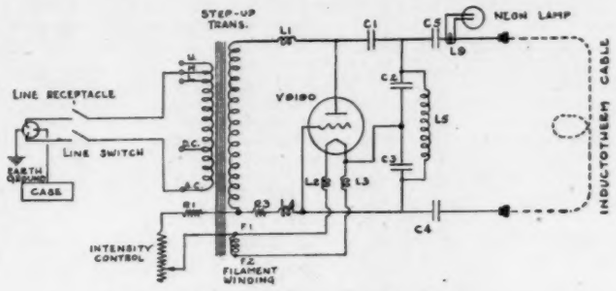
Tests similar to those performed by Mortimer and Osborne and reported in THE JOURNAL, April 20, 1935, were conducted in a clinic acceptable to the Council to determine the efficacy of the one tube model of the General Electric Inductotherm for producing heat in living tissues.

In all, eight tests were made on eight different subjects. Three turns of cable were wrapped around the human thigh, the coils being separated from the skin by three-fourths inch padding. The application time was twenty minutes.

The results obtained indicated that the final temperature in the muscle (quadriceps extensor) was 105.4 F., while the temperature rise was 6.8 degrees F.; in the subcutaneous tissues the final temperature was 104.8 F. and rise 7.6 degrees F., and on the skin surface under the padding the final temperature was 101.0 F. and the rise 5.2 degrees F. The mouth temperature rise was 0.6 degree F. Each item aforementioned is the average of eight observations. The intensity of the current was governed by the patient's tolerance.

In a series of five fever treatments on different patients, the average time the Inductotherm was on was about two hours and the average final rectal temperature was about 105 F. The average initial temperature was 99.04 F. The average rise was therefore 6 degrees, or 3 degrees per hour.

The technic employed was as follows: A treatment bag was opened and a full length rubber sheet to protect the bag from perspiration was inserted. The rubber sheet was then covered with a terry-cloth blanket, folded once longitudinally. The open side was then placed toward the side of the bag having the opening for taking rectal temperatures. The patient was placed within the blanket with a terry-cloth blanket pinned as a shawl around his neck. A full size blanket was then placed over the terry-cloth covering the patient and the treatment bag closed. The 12 inch disk electrode was positioned approximately half over the chest and half over the abdomen of the patient. A full



Schematic diagram of circuit.

length rubber sheet and a blanket were then placed over the disk electrode and the treatment bag.

The mattress on which the patient lies should be nonmetallic. If it is of the inner spring type, there is a possibility that intense currents may be generated in the springs, thus raising their temperature and igniting the inflammable part.

In view of the favorable report presented, the Council on Physical Therapy voted to include the Inductotherm (one tube type) in its list of accepted devices.

McKESSON RECORDING METABOLOR (No. 175) ACCEPTABLE

Manufacturer: McKesson Appliance Company, Toledo, Ohio.

This unit is a closed circuit, wet spirometer, metabolism apparatus.

The estimation of metabolism is derived from a measurement of the volume of oxygen consumed during a given period of time. The consumption of oxygen is measured by a water spirometer; it is recorded on chart paper, which is carried across a vertical place from a spool rotated by an electric motor concealed in the base, the chart paper moving at a known, uniform rate. The determination is started with the spirometer containing an unknown volume of air rich in oxygen. Since the volume thrust of the spirometer is known, as well as the rate at which the chart paper is moved, the rate of oxygen consumption can be determined from the slope.

A "calculator" is furnished for determinations, the figures being carried to the second decimal place. If the calculator is not used, one multiplication and one division are necessary for computations.

The apparatus is compact and appears to be well made. In use, the device occupies space about 19 by 37 by 12 inches; compact, it measures 16 by 16 by 12 inches; its weight is about 33 pounds intact, including 5 pounds of water. The standard unit operates on 110 volt, 60 cycle alternating current, but direct current units are available. The pen is directly connected to the counter-weight and automatically adjusts itself to the base line of the chart. The motor turns the paper at the rate of one inch per minute; the usual time for one test is six or eight minutes, and the contents of the bell is from 5½ to 6 liters. The standard equipment includes large and small face inhalers, inhaler harness, large and small oral inhalers, nose clamp, chart roll (200 tests), quart can of soda lime, and a cover.

The machine was tested in a clinic acceptable to the Council and found to give satisfactory service. In view of this favorable performance, the Council on Physical Therapy voted to include the McKesson Recording Metabolor in its list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 28, 1936

MEDICAL PROBLEMS CREATED BY THE FLOODS

The magnitude of the task for sanitary engineers and physicians created by the extensive floods in the East is only beginning to be realized. The flood menace is nothing new in the history of mankind; it has been one of the most terrifying of the natural phenomena recorded in legend and history. The health problems created by floods are naturally somewhat modified by their location, extent and season.

While it is impossible to distinguish sharply between the strictly sanitary problems and the direct danger of infectious disease, some division may be recognized. The sanitary problems are manifold. Perhaps most pressing is the water supply. Extensive contamination must have occurred in the large centers as well as in the rural districts. The floods of the past have done much to show the importance of immediate attention to this problem. Emergency measures, such as chlorination, filtration and boiling, must be established immediately. In some communities, force may be required to prevent the widespread ingestion of contaminated water by many people. An integral part of this program is the adequate disposal of sewage. The extensive utilization of chlorinated lime is advised as most immediately effective.

Food supply is only less important than water supply. The rapidity with which a crisis can be reached is evidenced by the riots for food which, newspapers report, occurred in the Pittsburgh district.

In some regions insect control, especially of malaria-bearing mosquitoes, is of enormous importance. In the Mississippi valley floods in the spring of 1927, screening for malaria was demanded. In some of the districts involved in the present floods this may again be important. The season of the year, however, makes the danger of these insects as well as of flies less significant than might be the case later on.

The sanitary factors are primarily concerned with the prevention of intestinal diseases. Typhoid fever, bacterial and amebic dysentery and paratyphoid infections are most likely. Much can be learned from past floods as to the sanitary measures that can be employed to this end. The most extensive recent flood in this country was that of 1927, which involved Arkansas, Kentucky, Louisiana, Mississippi, Missouri and Tennessee. At that time measures were so efficient that there was in many states a lessened incidence of infectious disease as compared with that of previous years free from floods.

Hand in hand with the necessary sanitary measures must go the specific measures for disease prevention. Most important is typhoid immunization. In the 1927 flood approximately 500,000 complete typhoid immunizations were administered, and the demand for typhoid vaccine today will probably exceed considerably the demand at that time. Doubtless these immunizations have been begun on a large scale already. Smallpox vaccination is equally imperative. About 150,000 vaccinations for smallpox were given at the time of the Mississippi floods, and though it is probable that a somewhat smaller proportion of unvaccinated individuals reside in the present flooded areas, the demand for vaccine will undoubtedly be great.

The large number of individuals who have had to move out of their homes has necessitated in many instances crowding into small quarters similar to that which existed in the concentration camps at the time of the World War. Such crowding inevitably favors the propagation of epidemic disease. It is difficult to know what epidemic diseases might be most likely to become rampant. Certainly influenza and epidemic meningitis must be anticipated with the greatest possible vigilance.

Great disasters involving a large number of refugees require also special measures to prevent the spread of venereal diseases. The Mississippi floods of 1927 involved mostly rural communities; with large urban groups crowded together in the present floods, the prevention of the venereal diseases may be even more difficult.

Judging from past experience, it is probable that the diseases produced by direct exposure will be less than might be anticipated. For the most part they will involve only persons directly exposed to the elements for long periods of time, such as policemen, national guardsmen and those engaged directly in rescue work. The season of the year, however, enhances the possibility of the spread of the diseases caused largely by direct exposure. Of these the most important is unquestionably pneumonia. No doubt there will be a considerable increase in the number of cases of this disease over that ordinarily expected at this season of the year. Because of the recognition of this danger, however, many individuals will take somewhat better care to guard against it than they would under ordinary circumstances.

The menaces briefly mentioned here are some of the most obvious and easily predictable. In themselves they offer problems of gigantic proportions to public

agencies and to physicians. Unfortunately there are likely to be other and unexpected health complications. What these may be will probably not become known for some weeks after the emergency has largely passed. Some slight permanent benefit may be obtained from the fact that large groups of people are immunized to certain diseases and from the fact that some, for the first time, will learn the importance of sanitation and disease prevention.

REESTABLISHMENT OF MEDICAL R. O. T. C. UNITS

The medical reserve officers training corps units that were established between 1920 and 1922 in some of the leading medical colleges of the country graduated more than 6,000 students. The courses were conducted by officers of the medical Corps of the Regular Army. More than half of the Medical Reserve officers commissioned during the last ten years are R. O. T. C. graduates. Moreover, the system has served to establish valuable contact between the Medical Department of the Army and centers of medical education. In times of national military emergency, expansion must obviously begin in these centers of medical education.

During the past four years the congressional appropriation acts for the support of the army have contained a provision that funds appropriated for the army R. O. T. C. units would not be available for medical R. O. T. C. units. As a result these units, which were established in twenty-four of the medical schools of the country, were curtailed year by year until the effect of the legislation in 1935 was to abolish them completely. This year, however, the Senate Committee on Appropriations has included provision for medical R. O. T. C. units. This would authorize the War Department to reestablish such units during the current year and would permit the department to set them up in each of the medical schools in which such units were previously conducted. The bill as passed by the Senate now goes to the House of Representatives.

The House of Delegates of the American Medical Association, at its annual session in 1935, adopted a resolution urging the reestablishment and maintenance of facilities for the preliminary military training of medical officers. Even the most ardent pacifist must recognize the necessity for an efficient medical corps in the army of any nation. The medical corps keeps out of military service those who are physically and mentally unfit. It conserves the health of those who enter the service. The physician who limits his activities to private practice cannot, however, be familiar with many procedures that are implicit in the work of the army medical officer. Army medical service demands knowledge of camp sanitation and hygiene, the keeping of efficient records, organization of hospital and special military units, and military precedents, rank and etiquette, which can be acquired only by suitable training. Obviously it is not practical to delay the training of physicians in these matters until after hostilities have begun. Provision for such training in medical schools during times of peace will mean that the Medical Corps of the Army will have at all times available a considerable body of suitably trained men who may be called when occasion demands.

The act of Congress correcting the discrimination against medical reserve officers training corps units has already passed the Senate and, as previously stated, now goes to the House of Representatives, where it is known as H. R. 11035. In the ordinary course of business the Senate and the House will appoint conferees to adjust the differences in the bill as passed by the two bodies. The fate of the Senate amendment authorizing the establishment of medical units depends primarily, therefore, on the action of the conference committee. Favorable action will be hailed by the medical profession as a recognition of the importance of medicine in the scheme of national defense.

THE RÔLE OF ESTROGENIC SUBSTANCE IN TUMOR FORMATION

Evidence that the ovary may be implicated in the production of cancer of the breast has long been available. Twenty years ago Lathrop and Leo Loeb [1] demonstrated that ovariectomy in mice during the first few months of life definitely reduces the incidence of mammary cancer. Subsequent extirpation and transplantation experiments by Cori and by Murray extended these observations. When pure estrogenic compounds became available, attempts naturally were made to test the effects of injection of these substances on the production of mammary cancer. Thus, Lacassagne demonstrated that long continued administration of estrogenic substance to mice, of a strain in which only the females normally develop spontaneous mammary adenocarcinomas, leads to the development of such malignant tumors in the males. On the basis of these and other experiments the Council on Pharmacy and Chemistry [2] warned three years ago that "the possibility [of deleterious effect from the clinical administration of estrogenic substance] deserves serious consideration, particularly if the large doses more recently employed clinically should come into common usage." That the Council's admonition was warranted has become increasingly apparent as further experiments have confirmed and extended the earlier studies. Burrows [3] and Bonser [4] have confirmed Lacassagne's observations, and suggestive results have been reported by Loeb.[1]

1. The literature is critically reviewed by Loeb, Leo: Estrogenic Hormones and Carcinogenesis, chapter XIII of Glandular Physiology and Therapy, Chicago, American Medical Association, 1935.
2. Estrogenic Substances: Theelin, report of the Council on Pharmacy and Chemistry, J. A. M. A. **100**: 1331 (April 29) 1933.
3. Burrows, Harold: Carcinoma Mammae Occurring in a Male Mouse under Continued Treatment with Oestrin, Am. J. Cancer **24**: 613 (July) 1935.
4. Bonser, G. M.: Carcinoma of the Male Breast in Mice Induced with Oestrin, J. Path. & Bact. **41**: 217 (July) 1935.

More recently another investigation of this question has been published; Gardner and his co-workers [5] injected large doses of estrogenic substance in oil into male mice of a high tumor rate strain. Mammary cancers developed in eight of the animals following treatment (this almost never occurs spontaneously in the males). One of the tumors grew rapidly on transplantation into other mice.

Much evidence is now available that estrogenic substances may predispose to the development of pathologic proliferation in tissues that normally respond to their presence by growth. In addition to breast tissue in both sexes, this has been noted in the uterine cervix and endometrium [6] of the female and in the prostate and other genital organs of the male,[7] in animal experiments. Evidence has also been adduced that estrogenic hormone is concerned in the production of uterine and breast tumors and even of prostatic hypertrophy in human beings.[8] High titers of estrogenic principle have been noted in tumors of the breast and uterus.[9]

While further well controlled studies will be necessary to establish definitely the rôle of estrogenic substances in various pathologic proliferative processes (particularly the effects of the different compounds), present knowledge indicates the necessity for caution in the prolonged use of large doses, especially in patients in whom there is reason to suspect susceptibility to cancer.

5. Gardner, W. U.; Smith, G. M.; Allen, Edgar, and Strong, L. C.: Cancer of the Mammary Glands Induced in Male Mice Receiving Estrogenic Hormone, Arch. Path. **21**: 265 (March) 1936.

6. Overholser, M. D., and Allen, Edgar: Carcinoma of Cervix Following Theelin or Amniotin and Trauma, Proc. Soc. Exper. Biol. & Med. **30**: 1322 (June) 1933; Anat. Rec. **55**, No. 4, suppl. 32, 1933.

7. The literature is too extensive for citation here. Among those who have made contributions to this question are David, Korenchevsky, De Jongh, Burrows, Frazier, van Wagenen, Parkes and Overholser and their respective collaborators. See also Moore, C. R.: The Testis Hormone, chapter XVIII of Glandular Physiology and Therapy.[1]

8. Geschickter, C. F.; Lewis, Dean, and Hartman, C. G.: Tumors of the Breast Related to the Oestrin Hormone, Am. J. Cancer **21**: 828 (Aug.) 1934. Witherspoon, J. T.: The Estrogenic Principle, the Common Etiological Factor of Endometrial Hyperplasia, Uterine Fibroids and Endometriomas, Surg., Gynec. & Obst. **61**: 743 (Dec.) 1935. Moore.[7] (A number of pertinent references have been omitted owing to space limitation.)

9. The interpretation of some of these studies is in doubt in view of the observations of Frank with respect to the estrogenic titers of normal muscle tissue: Frank, R. T.; Goldberger, M. A.; Salmon, U. J., and Friedman, Reuben: Significance of Estrogenic Factor in Tumors and Tissues of the Human Female, Proc. Soc. Exper. Biol. & Med. **32**: 1665 (June) 1935. Frank, R. T.: Sex-Endocrine Factors in Blood and Urine in Health and Disease, chapter XVI of Glandular Physiology and Therapy.[1]

Current Comment

EFFECT OF LIVER EXTRACTS IN EXPERIMENTAL AMEBIASIS

The elucidation of the rôle of dietary factors in the control of intestinal amebiasis is an important problem. The investigations of Faust and his collaborators have demonstrated the ameliorative effects of feeding raw liver or powdered liver extract to dogs infected by intracecal inoculation of Endamoeba histolytica; in some cases complete eradication of the protozoon occurred with this treatment alone.[1] However, the nature, identity and mechanism of action of the substance in liver responsible for these effects is not known. The active material is destroyed by heating in an autoclave at 17 pounds pressure for twenty minutes; it is apparently present largely if not chiefly in the liquid fraction of raw liver. Desiccated stomach has no ameliorative effect (but actually a deleterious effect) unless it has first been heated in an autoclave. The identity of the active substance with the antianemic principle has been questionable. Recently, Faust and Swartzwelder [2] have investigated the effect of purified liver extracts administered intramuscularly on experimental amebiasis in dogs. Fourteen infected animals were injected every two or three days with 2 or 3 cc. of extract (each cubic centimeter representing 5 Gm. of pig's liver); six dogs received a commercial extract and eight a special extract prepared by the investigators. Contrary to the effects of feeding liver or liver fractions, the extract administered intramuscularly failed to control the infection although the erythrocyte count was increased. Faust and Swartzwelder conclude that "the fraction of raw liver which is efficacious as an amebostatic agent is either different from that which [produces] erythropoiesis or . . . its amebostatic action is inhibited when it is introduced intramuscularly."

1. Effect of Diet in Experimental Amebiasis, editorial, J. A. M. A. **104**: 564 (Feb. 16) 1935.

2. Faust, E. C., and Swartzwelder, J. C.: Use of Liver Extract Intramuscularly in the Course of Acute Amebiasis in Dogs, Proc. Soc. Exper. Biol. & Med. **33**: 514 (Jan.) 1936.

SHORT WAVE DIATHERMY—"THE SHADOW"

In radio channels between 37 and 11 meters there has appeared of late a mysterious radio interference, said by radio engineers to be due to everything from "celestial invasions" to the malice of an "antisocial crank." Reports indicate that the interference has conflicted with commercial and amateur broadcasting, with some government stations and even with radio communications during the recent stratosphere flights. Now Prof. Harry Rowe Mimno of Cruft Laboratory, Harvard University, seems to have traced the interference, in at least one instance, to a short wave diathermy machine used on the Harvard University campus. Professor Mimno reports that code signals broadcast by the machine were picked up at the Naval Research Laboratory at Bellevue, D. C. Moreover, an editorial in the February issue of *Q. S. T.*, the official organ of the American Radio Relay League (organization of radio amateurs known as "hams"), states that communication signals emanating in Boston were picked up by receiving stations at Norfolk, Washington, Bellevue and the Great Lakes. The short wave machine was not equipped with an antenna and the radio frequency energy was fed back into the power wires; hence the alternating current power supply system was the antenna. Each manufacturer of short wave diathermy equipment has his favorite wavelength or wavelengths and asserts that these are most efficient for therapeutic purposes. The Council on Physical Therapy of the American Medical Association does not accept the claim that one wavelength is more efficient than another. Since certain radio channels have been allocated to commercial, navy and army stations and also to amateur radio enthusiasts, manufacturers of short wave diathermy equipment could solve the question of interfer-

ence by developing evidence to substantiate the efficiency of some one wavelength, which channel could then be assigned to them for therapeutic purposes. In the meantime those accused of interfering with radio communication may consult manufacturers as to proper methods of screening and minimizing interference.

Medical Economics

MEDICAL SOCIETY AGREEMENT FOR CARE OF THE INDIGENT SICK

Mahoning County Medical Society (Ohio) has recently entered into a contract with the county commissioners, for the giving of medical relief, that has some novel features. Entire control of the responsibility for medical care is vested with the county medical society. Fee schedules formerly set up under the FERA are accepted. The individual physician has no direct relations with the county relief agencies. All such arrangements are handled by the county medical society as a unit. The county medical society is made responsible for the character of the medical care and the discipline of its members. The agreement in full is given below:

AGREEMENT

This agreement between the County Commissioners of Mahoning County and the Mahoning County Medical Society,

WITNESSETH:

WHEREAS: There is a temporary shortage of money for medical relief, and

WHEREAS: The physicians of Mahoning County are willing to arrange some practical and permanent plan of medical care for those on relief, and

WHEREAS: It is the agreement of the Mahoning County Medical Society and the Commissioners of Mahoning County that the fees formerly paid by Federal Relief to the physicians of Mahoning County are satisfactory for the present to both parties.

NOW THEREFORE:

It is agreed between the parties hereto:

(1) That such fees shall be in effect until July 15, 1936, at which time there shall be negotiations for a new fee schedule.

(2) That the County Commissioners will not set up clinics for the treatment of any special type of disease.

(3) That all matters relative to the conduct of practicing physicians in Mahoning County in their relations with the County Commissioners shall be subject to and passed upon by the Medical Economics Committee of the Mahoning County Medical Society.

(4) That a board composed of the Economics Committee of the Mahoning County Medical Society, one dentist, one nurse, one pharmacist, and one representative of the hospitals, be empowered by the Mahoning County Commissioners to suspend either temporarily or permanently any physician after a fair and impartial hearing whose conduct is unbecoming that of a physician and a gentleman, and that this action will be final. That any practitioner of medicine found guilty of unprofessional conduct in his treatment of the indigent sick of Mahoning County shall have his name removed from the eligible list and shall not receive remuneration from Mahoning County for the care of the indigent sick of this county.

(5) That the medical relief office be under the direct supervision of physicians who shall spend the necessary amount of time in that office to insure its proper and efficient operation. These physicians to be under the direction and supervision of the Economics Committee of the Mahoning County Medical Society.

(6) That the manner of rendering bills be set up with no more red tape than is necessary. That an itemized statement and diagnosis be required. That red tape and clerical work be abolished. That bills so rendered be paid within thirty days after receipt of statement.

(7) That the duties of the medical relief office be clearly and distinctly divorced from the office of the County Health Officer and the city health commissioners, and that the County Commissioners deal only with the duly appointed committees of the Mahoning County Medical Society in regard to medical relief matters.

(8) That under no circumstances are verbal conversations to be taken as authentic, but that all orders, intents, etc., be clearly expressed in writing and signed by the proper authority.

(9) This agreement may be rescinded by either party on ten (10) days notice by either party to the other.

IN WITNESS THEREOF, the parties hereto have hereunto set their hands to duplicate copies hereof, this day of February, 1936.

MAHONING COUNTY MEDICAL SOCIETY

BY:.....

.....

.....

.....

MAHONING COUNTY COMMISSIONERS.

WITNESSES:

.....

COMMENT

This agreement is distinguished by its simplicity and clarity. It is clearly based on the existence of a cooperative spirit between the county medical society and the county commissioners. The temporary and emergency character of the fee schedule is definitely recognized. The establishment of undesirable patterns of medical service, such as free clinics, is prohibited. While the county medical society is given direct supervision of medical service, there is a provision for arbitration of differences and discipline for conduct at variance with medical ethics or with the provisions of the agreement. Unnecessary red tape is definitely eliminated. A clear line of separation is drawn between the practice of medicine and the administration of public health. The emergency character is insured by a provision for termination with ten days' notice.

Association News

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE AND HOSPITALS

Thirty-Second Annual Meeting, held in Chicago, Feb. 17 and 18, 1936

DR. FREDERIC A. WASHBURN, Boston, in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 17—MORNING

Report of the Council on Medical Education and Hospitals

DR. RAY LYMAN WILBUR, Stanford University, Calif.: Today medical education is one of the severest of all the mental disciplines. It requires a decade or more of thorough training of the mind and of the body. It demands both expert technical training and sound mental processes. The training of the hands and of the brain must go together. On looking over the last twenty-five years of medical education in the United States one finds that there has been an expansion of equipment, personnel and curriculum to meet the expanding knowledge and the increased requirements of medical practice. A decade and a half ago in the attempt to cover everything there was an engorged and almost impossible curriculum. At the present time the stage of shaking the curriculum down to its fundamental core is being gone through. The survey of the medical schools that has been going on during the past year has brought out clearly the considerable variations in different parts of the country and the strange combinations of tradition, strong personalities, and the absence of necessary funds to do up-to-date educational work in most parts of some medical schools and in some parts of all, or nearly all, medical schools.

Sometimes extensive education and prolonged training are belittled by those who think there are short cuts to health and trick ways to recognize diseases and treat the sick. The calls on the young doctor are so various and so imperative that in our zeal we may have tried to be too inclusive in the multiplicity of subjects offered him. It is now essential that in every department in the medical school and in every part of the curriculum we should weigh, ponder, evaluate, choose and discard, so that we shall not provide more than can be absorbed. The antique, the petty, the nonessential should be tossed aside by both the schools and the examining boards. Above all, the principles of biology, chemistry and physics must be the ever present substratum to the knowledge of body structure, physiology and pathology.

Since we can in no way fully prepare the physician for what he will actually do ten years ahead, we must provide him an understanding of fundamentals so that he can pick and choose. We cannot foresee what ten more years of medical research will bring. Compare the treatment of diabetes today with a few years ago, and this point is clear. Nevertheless the young doctor must know the immediate actualities of every day in

the care of the sick and be abreast of the best of the days of his training. The required intern year is little enough to ask in the way of additional preparation beyond the classroom and the clinic. In some schools there still lurks the superstition that doctors can be made by textbooks, lectures and charts; but only through the living, suffering human being can the care of the sick and the protection of the well be learned. This is the reason for our clinics, hospitals and nurses—forming the heart of our medical schools. The laboratory is simply more bedside equipment, not an end in itself.

Some academic teachers in all parts of the medical school are now a requisite for first-class work. I use the term "academic" rather than "full time" as I resent any such imputation in the university or medical school. A professor should meet his major obligations to his institution but should have a considerable part of his time under his own control to use for such research study or other enterprise as he may determine with his own knowledge of himself and what he can do and likes to do. In brief, all departments need some men on salaries to ensure good and steady work. To turn a class of medical students into capable physicians requires the energies and time of a comparatively large faculty on which there is some room for all kinds of talents and a variety of practitioners.

Medical centers are inevitable in all communities, and the center formed by a medical school and its hospitals has the most promise of success. More and more, the physician is becoming the agent of society. Medical economics is now generally recognized as a need of medical students, but little has been done about it. We are baffled as to how to proceed. We want the young doctor to know something about it, but not enough to break away from what are supposed to be our special traditions. Everything is becoming more costly as medicine becomes more scientific. The most striking finding of our survey of the medical schools is the lack of adequate funds; and the most glaring weaknesses of the schools could be largely cured with dollars. A continuation of large gifts and large appropriations for all our schools is requisite if there are to be adequate research, good training of the young physician, and excellent care of the sick. Next in significance to the training of medical students is the continuous and effective education of the doctor. Our largest cities are not yet great medical centers for postgraduate training; but a number of consequential steps have been taken.

So far as we have gone with this present survey, we have been impressed by the great improvements made and the fine spirit of the medical faculties, and with the large amount of sound research under way.

The Accrediting of Higher Institutions

GEORGE F. ZOOK, PH.D., Washington, D. C.: To any one who has studied the history of the professions it seems clear that they themselves should exercise extended control over the nature of the preparation which individuals should offer for entrance into them and even the number who are admitted to their privileges. Who, if not the members of the profession, can be counted on to know its problems and to be a competent judge of the quality of its personnel? In the last twenty-five years medicine offers us the clearest demonstration of the fact that in America the members of a profession who are both wise and zealous will be accorded the most extended control over the development of their profession. Yet I believe that we are at the beginning of a new era which demands as much vision and courage to solve the problems of accrediting as our predecessors exhibited a generation ago.

In the first place the increasing success which attends the accrediting of individuals who enter medical schools as students tends to reduce the importance of accrediting educational institutions. Every time that, through the giving of a general intelligence test, a medical aptitude test or any other measure of probable success in medical schools, we increase our ability to identify successful medical students, to that extent we make less necessary reference to the long list of accredited high schools and colleges in which they happen to secure their premedical education.

Secondly, I believe that the accrediting of medical colleges should be turned over largely to the medical colleges themselves. I believe that the present system of accrediting opens the profession to serious attack, perhaps unjustifiably, both from within and from without the medical profession. So long as so much illness and so many surgical needs go unattended there are those who will never be satisfied that the number of students in medical colleges should be reduced by the action of the medical profession, as is being accomplished in part through the visitation now under way. The opposition to the attempt to discontinue the accrediting of the two-year medical schools can be interpreted in no other way, I suppose, than as a warning from medical educators that the accrediting of medical schools is really their affair. It would seem indeed that the action of the Council on Medical Education and Hospitals in June 1933, accepting the statement of the Association of American Medical Colleges relative to admission requirements and the medical curriculum as an integral part of the requirements or "Essentials of an Acceptable Medical School," was a recognition of the jurisdiction of the colleges themselves in a matter of this kind. I am convinced also that the medical colleges, for their own good, need to have the responsibility for their own accrediting. The period for policing medical schools is about over, or, to be more accurate, it will in the development of medical education be of less and less importance. The reduction in medical schools has been carried to the point at which hereafter there will be more and more division of opinion on all matters involving drastic action. The medical schools that have survived the early period of rigor have for the most part grown up into responsible organizations. Hereafter the real problem will be to set at work the forces for self improvement throughout the medical colleges of the country, to encourage those who are low in attainment to emulate the more successful institutions, and to stimulate even the best institutions to new and greater levels of achievement.

The stimulation of higher institutions to self improvement and superior standards can best be done through precept and example by those who are themselves engaged in the work. The first requirement is that institutions be able to cast aside, temporarily at least, outside restraints which inhibit experimentation with unconventional processes.

There is another process on which all accrediting agencies have placed great reliance; namely, that of inspection. An outside inspector, or inspectors who are known to be thoroughly competent and sympathetic, can do more to jar an institution loose from a spirit of dull complacency than almost anything one can think of. I am convinced, therefore, that for purposes both of accrediting and of stimulation the device of visitation is highly desirable. The Council on Medical Education and Hospitals has wisely chosen as inspectors people out of the medical schools themselves who are known to be thoroughly competent. Nevertheless, the inspectors have represented essentially an outside organization. They have been received with a certain amount of trepidation almost everywhere. I venture the opinion that even in the better institutions the inspections have been too much in the nature of detailed criticisms. There is not enough of the element of friendly stimulation, which should be the keynote for the visitation at all institutions save those which may properly be regarded as marginal in character.

My last observation is that accrediting agencies in higher education should eliminate quantitative standards and go over completely to a frank attempt to evaluate qualitatively the processes and product of higher institutions. In the earlier days it was natural that good institutions should be defined in terms of physical plant, endowment, semester hours and faculty preparation. These criteria were quantitative and they were merely somebody's opinion. Furthermore, while they were crude measures they served their day well. But today, when we are able to apply far more reliable measures of individual diagnosis and growth and when judgment as to both individual and institutional status may be rendered much more reliably than in those earlier days. We should cast off quantitative standards in favor of qualitative criteria in evaluating the work of higher institutions.

In recent years, the movement in medical education has been in the direction of qualitative criteria and away from quantitative considerations. Even the regulation concerning the specific number of semester hours in chemistry, physics, biology

and English have been removed and the Association of American Medical Colleges has gone on record as being opposed to premedical curriculums, preferring that students who enter medical schools should during their college years be not in any way set apart from other students.

It is the duty of those interested in education to see that the evaluation of the schools and colleges is undertaken by those who are most competent and that they use criteria and methods which are valid and stimulating. Of equal importance is the fundamental conclusion that the present minimum specific standards for higher institutions should be replaced by optimum general criteria. The implications resulting from this radical change in policy will make it necessary to revamp the whole procedure of accrediting. It opens the way for any accrediting organization to expend the major part of its energy in a program of friendly stimulation and assistance to approved institutions.

DISCUSSION

GEORGE A. WORKS, ED.D., Chicago: Every active accrediting agency is faced by the local administrator who wishes it to protect him against his lack of vision, energy or courage and to give him guidance in details for which he and members of his staff should assume full responsibility. An accrediting agency should resist pressure of this character. Advice may be freely given, but the decisions should be made by those who are in immediate charge of the institution. No accrediting agency can take the place of ability, courage and vision on the part of those administratively responsible for a higher institution, and it should never attempt it. This means that as long as boards of control and executives, owing to a lack of vision or for ulterior purposes, misuse their responsibilities the police function should be at hand as a means of protecting society. The third point relates to the substitution of qualitative standards for quantitative ones. Dr. Zook called attention to the recent change made by the North Central Association in the substitution of its present statement of policy for its former standards. The emphasis of the latter was on quantitative requirements mechanically applied. The changed procedure has given a large share of the member institutions of the association a new attitude toward growth and development, a change that is distinctly for the better. But how Dr. Zook, in Washington, was able to hear the "sigh of relief" that went up from colleges in the North Central territory and not at the same time hear the groans that arose immediately thereafter, when it was discovered that the new accrediting procedures involved a great deal of work, is beyond my comprehension. In no quarter were these groans more audible than in the corner occupied by the medical institutions that were constituent parts of member institutions. A word as to why this change has come about so far as the member institutions are concerned, in their attitude toward the Association. It is due to the fact that there are no longer fixed standards mechanically applied, but we endeavor over a period of time to develop a pattern of every institution that we have in our membership. We don't attempt to say that the institution will be deprived of its membership or refused admission to the association on the basis of any single item or any two or three items, but we say on the basis of the picture it presents as a whole, in comparison with the membership of the association. None of these are fixed, because as the member institutions increase their expenditure per student, that raises the hundred percental. What were regarded as minimum standards by the association came to be thought of by many members as maximum standards, and once an institution was in the association it had reached the haven of rest and no further progress was necessary. The institution that goes to sleep for two or three years finds that the majority of the membership has in that period been moving forward; therefore it has lost ground and its membership in the association may be jeopardized. That fact alone, plus the greater care with which we arrive at our data have completely changed the attitude of most of the members toward membership in the association.

REV. ALPHONSE M. SCHWITALLA, St. Louis: The method of antithesis that Dr. Zook has employed labors to some extent from its own limitations. It stresses the north and south poles and is apt to make one forget that there is an equator somewhere. Is it correct to stress an antithesis in the accrediting of institutions of higher learning by saying shall the accrediting be done by the profession or by the schools? There is a third possibility. It can be done by both. It can be done also by that other element that stands on the outside of the strictly accrediting process; namely, the state boards. So, as I see it, the accrediting that is now going on is an example to other agencies which have thus far not as yet used this technic. I think that the Council on Medical Education and Hospitals has introduced a new feature into the concept of the accrediting of higher institutions by stressing in its first pronouncement that the accrediting will not be done by the profession alone, nor by the schools alone, nor by the state boards alone but will be done by all those agencies interested in medical education. Now, what is the unit of self determination that shall accredit the schools of medicine? I like to place the profession of medicine in the center of the picture, with the educational activities that are proper to that profession on one side, with the social relations of that profession on the other. The important thing in the picture is that the profession of medicine gives and gets stimulation from the adjoining neighbors, and the integration of those factors is done by the profession of medicine rather than by the schools, and in that I am by no means weakening my position, I hope, as an educator. But I am recognizing what Dr. Zook and Dr. Works have both stressed, that, after all, the test of the educative process is going to be whether or not the product achieves the objective. We are in medical education not for the purpose of simply educating. We are in education for the purpose of achieving a product, an end, and that objective is the medical man who goes out to do his life work in our present social world.

DR. J. N. BAKER, Montgomery, Ala.: I speak from the standpoint of the licensing boards represented in this body. If our problem were only that of dealing with orthodox graduates, it would be simple, but there are many different varieties that appear before licensing boards, clamoring to treat diseases of human beings. There is our great problem. I have felt that, if there were any defect in our medical schools, it was that they were so intensely absorbed with the individual problems of teaching that sometimes they lost sight of the difficult problems confronting those entrusted with medical licensure. It is a joining of hands of three agencies, the medical profession, the Association of American Medical Colleges and the licensing boards, and the center of that picture should be the medical profession. Only with the coordinated effort and the integration of the three bodies that are so deeply interested in medical education and in seeing that the right sort of product is run through the schools to serve the general public will our object be attained.

Consistency versus Chaos in Medical Education and Licensure

DR. WALTER L. BIERRING, M.D., Des Moines, Iowa: All of the approved seventy-six medical schools in the United States and Canada have the same classification, yet a large gap is clearly evident between the different institutions. This is specially noted in the lack of unity in the general course of training. There is a further lack of coordination between the premedical and the medical sciences, and the relation of these courses to the clinical studies. An understaffing of the fundamental departments frequently exists with undue emphasis on clinical courses, particularly, in the medical and surgical specialties.

The American Board of Ophthalmology was organized in 1916, and of Otolaryngology in 1923, followed in 1927 by the formation of the American Board of Obstetrics and Gynecology, and of Dermatology and Syphilology in 1929. As other specialties began steps toward forming similar qualifying boards, the need was recognized for some central agency or supervising body such as the Council on Medical Education and Hospitals of the American Medical Association for the purpose of coordinating graduate education and the certification of specialists in the United States and Canada. At the Milwaukee session of the American Medical Association in 1933, a resolution was adopted by the House of Delegates author-

izing the Council on Medical Education and Hospitals to formulate standards of administration in general based on those of the four specialty boards previously organized and to recognize new boards meeting these standards. To avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups, it was deemed advisable to create an Advisory Board for Medical Specialties, which should be representative of each organization concerned. This advisory board began to function in February 1934. Since that time the American Boards of Pediatrics, Psychiatry and Neurology, Radiology, Orthopedic Surgery and Urology have been organized and officially recognized. The organization of the American Board of Internal Medicine is practically completed and the formation of the American Board of Surgery and of Pathology are making rapid progress, this within three years after this movement was inaugurated at Milwaukee. Special boards in the twelve recognized specialties will be established and hereafter only such candidates will be certified as have completed the required course of special training and been satisfactorily qualified in the particular specialty. There will be fewer medical specialists in the future, but those who qualify will deserve the designation, for they will have passed the scrutiny of their peers. Thus again it has come to pass that the medical profession has solved another of its important problems.

To cast a glance into the future, a fact stands forth as having special implication for medical education: the restriction and higher qualification of the different medical specialists. In consequence of this and other evident tendencies the practitioner is being restored to an honorable place in the practice of medicine. It seems rather well established that only 15 per cent of those who become ill will require the services of a specialist, and thus 85 per cent of those who are sick as well as a large proportion of those who are well will come within the service of the general practitioner. This constitutes a distinct challenge to the educational forces that entails a number of distinct reforms in medical education, which may be more clearly defined after the completion of the present resurvey of American medical schools. There appears to be a general objective of simplifying plans of instruction, and a subtle change has come in the type or quality of medical learning, coincident mainly with the extension of our natural powers by mechanical devices. The erudite physician of another day seems to be passing. There is a growing feeling that medical education is tending in the direction of impersonality and that it is necessary to bring the patient again to the center of the medical student's interest. Premedical education as a prerequisite for the medical curriculum is regarded by many as far too technical. There is great need of reorientation of subject matter in the preliminary sciences. If we are correct in our conception of the sphere of service of the future practitioner, there is need of much reform in the training of the "basic" doctor.

DISCUSSION

DR. J. N. BAKER, Montgomery, Ala.: During the chaotic early days of the present century, when diploma mills were plying their nefarious trade with reckless abandon, the licensing boards in each state took their tasks seriously, thereby making a substantial contribution to the purging processes of the Council on Medical Education and Hospitals and the Association of American Medical Colleges. Today, so satisfactory are the two last groups performing their tasks, that licensing boards appreciate the needlessness, so far as orthodox practitioners are concerned, of further written tests on their part. In short, were it not for the harassing hurdle of heterodoxy, our problem would now be largely reduced to one of enforcement and the application of disciplinary measures. Unfortunately, problems in licensure cannot yet be solved by so simple a formula. Because of a general apathy or indifference or both on the part of the public and legislators toward elevated standards of licensure for those presuming to handle human ailments, various sorts of political compromises within the states still occur. Medical licensure being primarily a technical and professional problem, the medical profession, throughout this long struggle, has been out in the forefront, battling for the people's protection through a maintenance of high standards. Undoubtedly the zeal of the medical profession, spurred on by the apparent righteousness of its cause, has on many occasions been misconstrued by legislative bodies as acts of sheer selfishness. It seems difficult for the public to grasp the basic significance of legislative protection in the application of the healing arts and the fact that compromises with substandard training in this realm are not in the interests of sound public policy. The solution of most of the difficulties now being encountered seems to lie in education—education disseminated broadcast and wide through all strata of society as to the necessity for adequate scientific training before any one may be permitted, by law, to traffic in human life.

The State University and Professional Education

ARTHUR C. WILLARD, Urbana, Ill.: It seems necessary to limit my discussion to professional education which is continued beyond the baccalaureate degree. In this educational area in recent years the yearly statistics on enrolments and graduates in typical fields have run about as follows: General postgraduate schools beyond the bachelor's degree: 54,000 students, 17,000 masters' and 3,000 Ph.D. degrees. Law schools granting law degrees: 21,000 students and 5,400 graduates. Medical schools granting degrees in medicine: 22,000 students and 5,000 graduates. It is probably reasonable to assume that upward of 100,000 students are enrolled in graduate and professional schools and that between 14,000 and 15,000 graduates issue from these schools yearly, to say nothing of the 17,000 masters' degrees secured after only one year of postgraduate work.

The state universities, at least those which derived from the land grant college act of 1862, the Morrill act and subsequent acts of the federal congress, seem to have been conceived with the idea of providing a college education, largely at public expense, in every state and territory. The existence or nonexistence of private institutions in the same areas had nothing whatever to do with the matter. The industrial development in agriculture and the mechanical arts demanded scientific knowledge of a more technical or applied type than could then be secured in the existing institutions of college grade. It was a recognition of the need of professional training for industry. If college education, more or less at public expense, could be provided for farmers and mechanics, why not also for doctors, lawyers, bankers, teachers and many other groups concerned with our social, economic and industrial life? A tremendous expansion in college and university education has taken place in this country during the last half century on the assumption that more of everything was needed, from steel rails to professional education. Today any accredited high school graduate in any state or territory can secure a college education at practically little more expense than the actual cost of living at the state university. Free tuition scholarships are provided liberally at most state universities; for example, at the University of Illinois about 2,500 such scholarships are available. The youth of our country has welcomed this opportunity and more than a million, maybe a million and a quarter, of them attend our colleges and institutions of similar grade. Any one of these accredited high school graduates who can satisfy the requirements for a bachelor's degree is either already on his way into a profession or else is a potential candidate for further postgraduate work. In consequence of this growing popular interest in education at all levels, the demand for education at the professional and graduate school level is raising many questions, which are complicated in state universities by the fact that public funds are being spent for the personal benefit of a very small percentage of the population. The selection of these individuals is a matter of great importance, since the only justification for spending public funds must always be found in the benefits or services returned to the public. I am convinced that we consider too few factors or qualifications in admitting students for graduate or professional study in our state universities. Mental, moral and physical qualities of a high order are necessary and should be demanded of every candidate for professional education. On the other hand, the candidate should know as much as possible about the past and current conditions, as well as future prospects, in the field of his choice before he enters on his professional education.

I am not in favor of quotas to limit enrolment in state universities, but I am in favor of professional societies keeping

in close touch with the professional schools and in rendering advisory services relating to their problems. I am also in favor of the maintenance of the highest educational and ethical standards in selecting students and preparing graduates to enter the various professions. The activities of the American Medical Association and the American Bar Association in the fields of professional education and practice have inspired other professional groups to undertake similar surveys for the purpose of advancing their professional interests and standards of education and practice.

DISCUSSION

EUGENE A. GILMORE, LL.B., Iowa City: While there is a tendency to push strictly professional education more and more into the graduate levels, where undoubtedly most of it ought to be, we are still a considerable distance from this ideal. A university is the institution best fitted to provide adequate and liberal professional education, either at the undergraduate or the graduate level. Professional education can, to be sure, be achieved quite apart from a university. This professional education apart from a university is, however, usually narrow and excessively utilitarian in scope, and is dominated by direct vocational objectives. The practitioner schools, which were the first substitute for apprentice training, were once held in high esteem as the most efficient means for professional education. They probably are still so held by some. Indeed, a rather vigorous survival of this esteem may even yet be found, although the training has become associated with a university and may have become an integral part of a university. This survival manifests itself quite vigorously whenever it is proposed to reduce the time devoted to clinical work or to make any omissions from the overcrowded list of specific subjects about which it is thought the prospective doctor should have knowledge, or to substitute for laboratory work in the medical school carried on under a doctor general research in the basic sciences carried on under a nonmedical man in the laboratories of the university. That there is still a preference in certain areas for professional education apart from a university is shown by the fact that, of the 193 law schools now operating, seventy-nine have no university connection. The medical profession is more fortunate (or unfortunate, depending on one's point of view). Before the great housecleaning in medical education, there were a considerable number of medical schools not associated with a university. Of the present sixty-seven approved schools in the United States, fifty-nine have university association, more or less intimate. I have no doubt that professional education in law and medicine and in every other profession of a learned sort should be carried on as an integral part of a university and that there should be a very close relation between the professional group and the university group. In addition to the enrichment and improvement of medical science on its technical side through this association, there should come substantial progress toward the goal of a professional education in medicine which is less vocational and more liberal, and at the same time more efficient.

(To be continued)

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network.—The stations on the Red network of the National Broadcasting Company are WEAF, WEEI, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

Pacific Network.—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

Network programs are broadcast locally or omitted at the discretion of the local station. The lists indicate stations to which programs are available.

The next three programs are as follows:

March 31. Hay Fever and Asthma, Morris Fishbein, M.D.
April 7. Let Your Doctor Decide, R. G. Leland, M.D.
April 14. Summer Camps, Morris Fishbein, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Society News.—At the March meeting of the Maricopa County Medical Society, Phoenix, speakers were Drs. Dudley T. Fournier on "Nonconvulsive Toxemia of Pregnancy"; Benjamin Herzberg, "Modern Aspects of Treatment of Eclampsia," and Clarence B. Warrenburg, "Hormone Therapy in Gynecology." All are from Phoenix.——The ninth annual meeting of the Arizona Public Health Association and the short school for public health workers will be held at Tucson, April 20-22. ——Mrs. Kitty Ives Coleman has been employed on a temporary basis by the Arizona State Medical Association to assist Dr. Delamere F. Harbridge, Phoenix, secretary of the association. She will also serve as secretary for the Maricopa County Medical Society and the Maricopa County Library Board.

CALIFORNIA

Hospital News.—Kern County supervisors, with counsel from eleven other counties as amicus curiae, have appealed to the supreme court the ruling of a lower court and the court of appeals enjoining Kern County supervisors from admitting nonindigent or pay patients to the county hospital.

State Association News.—The sixty-fifth annual meeting of the California Medical Association will be held in Coronado, May 25-28. Guest speakers will include Drs. Campbell P. Howard, Montreal, Canada; Jacob J. Singer, St. Louis, and Franklin G. Ebaugh, Denver. Sunday, May 24, there will be two pathologic conferences on cancer, a clinical x-ray conference, a symposium on cancer for general practitioners, and a joint conference of association standing and special committees. The association has declared that x-ray and laboratory services cannot be divided into technical and professional divisions. It holds that x-ray diagnosis, laboratory services, administering of an anesthetic and hydrotherapy constitute the practice of medicine. A Hall of Medical Science, containing 22,000 feet of exhibit space, was opened at the San Diego Exposition, March 7, under the direction of the San Diego County Medical Society and the state medical association. Thirty-five exhibits are installed, including one of 500 square feet prepared by the American Medical Association.

Society News.—Among others, William Fowler of the California Institute of Technology, Pasadena, discussed "Recent Developments in Physics" before the Los Angeles County Medical Association, March 19.——The annual meeting of the California Tuberculosis Association will be held in Sacramento, April 3-4.——Dr. Francis D. Coman, Baltimore, physician to the first Admiral Byrd expedition to the South Pole, discussed "The Practice of Medicine in Little America" before the Hollywood Academy of Medicine, March 19.——At a meeting of the Society of Ophthalmology and Otolaryngology of Los Angeles, March 23, Dr. William P. Wherry, Omaha, discussed "Postgraduate Education in Otolaryngology: A Viewpoint of the Examining Board for Otolaryngology"; Dr. William L. Benedict, Rochester, Minn., "Surgical Conditions of the Orbit," and Dr. Dean M. Lierle, Iowa City, "Focal Infection in Arthritis." ——Dr. John Alexander, Ann Arbor, Mich., addressed a joint

meeting of the tuberculosis section of the Los Angeles County Medical Society and the Clinical and Pathological Society, March 27, on "Advances in the Surgical Treatment of Thoracic Disease."

CONNECTICUT

Low Infant Mortality Rate. — Connecticut recorded an infant mortality rate in 1935 of 43.2 deaths in the first year of life per thousand living births. There were 944 deaths reported and 21,860 living births. This is the lowest rate on record for the state.

The Ferris Lecture.—Davenport Hooker, Ph.D., professor and head of the department of anatomy, University of Pittsburgh School of Medicine, delivered the third Harry Burr Ferris lecture in anatomy at Yale University, New Haven, in the Sterling Hall of Medicine, February 19, on "Early Fetal Movements in Mammals."

Society News.—Dr. Newton E. Wayson of the U. S. Public Health Service discussed "Leprosy—Early Diagnosis in Children" before the Yale Medical Society, March 11.——Dr. Wilbur A. Sawyer, director of the International Health Division of the Rockefeller Foundation, New York, lectured in New Haven, March 13, under the auspices of the local chapter of Delta Omega, honorary public health society. His address was entitled "The Evolution of Our Ideas of Yellow Fever Epidemiology."——Dr. William B. Castle, Boston, addressed the Tri-City Medical Society (Norwich, New London and Willimantic), February 6, in Norwich, on "Recent Advances in Blood Diseases."

FLORIDA

New Health Unit at Hollywood.—A public health unit has been established in Broward County with Dr. Paul G. Shell, formerly of Marianna, in charge. The new unit will be maintained by Lauderdale, Hollywood and Broward County, their combined contribution of $5,000 to be matched by a similar amount from the state and federal governments. Headquarters will be in Hollywood.

GEORGIA

Dr. McCord Named Professor.—Dr. James R. McCord, professor of gynecology and obstetrics at Emory University School of Medicine, Atlanta, on a part time basis, has been named to a full time position, it is reported. Dr. McCord graduated from Jefferson Medical College, Philadelphia, class of 1909. For several years he has been conducting extension courses in obstetrics throughout the United States in his capacity as senior medical officer and special representative of the Children's Bureau of the U. S. Department of Labor.

Society News.—Drs. William Carter Smith and Launcelot Minor Blackford gave a paper before the Fulton County Medical Society, Atlanta, March 19, on "Syphilitic Aortic Insufficiency." Dr. Hulett H. Askew read a paper entitled "Rectal Fistula and Its Treatment" before the society, March 5.—— The Fifth District Medical Society was addressed in Atlanta, March 27, by Drs. John C. Burch, Nashville, on "Diagnosis and Classification of Menstrual Disorders"; William Perrin Nicolson Jr., Atlanta, "Carcinoma of the Breast"; Murdock S. Equen, Atlanta, "Partial Esophagectomy for Cancer," and Virgil P. W. Sydenstricker, Augusta, "Recent Developments in the Problem of Pellagra."——The Muscogee County Medical Society was addressed in Columbus, February 13, by Drs. William W. Anderson and Milus K. Bailey, Atlanta, on "Chest Conditions in Infants and Children" and "Problems in Pediatric Urology" respectively.——At a meeting of the Fourth District Medical Society in Griffin, February 12, speakers included Drs. Joseph C. Massee, Atlanta, "Pneumothorax and Other Measures in Treatment of Tuberculosis" and George L. Walker, Griffin, "Modern Treatment of Pneumonia."

ILLINOIS

Meeting on Stream Pollution.—Health directors and sanitary engineers representing Illinois, Iowa, Minnesota, Missouri and Wisconsin attended a meeting in Chicago, March 10, to consider a program of stream pollution abatement in the upper Mississippi drainage basin. State health directors in each of the states named have signed an agreement to cooperate in this program.

Annual Tumor Clinic.—The sixth annual tumor clinic will be held at the Veterans' Administration Facility-Edward Hines Jr. Hospital, Hines, April 9. The clinic will begin at 2:30 in the afternoon, under the direction of Dr. Max Cutler, Chicago, and staff officers of the tumor clinic of the hospital. Following dinner in the evening, Dr. Gordon B. New, Rochester, Minn., will be the guest speaker.

Chicago

Interns' Banquet.—The Cook County Hospital Interns' Association will hold a banquet April 1 at the Congress Hotel at 7 p. m. Dr. Morris Fishbein will be the guest speaker. Mail or telephone reservations to R. A. Lifvendahl, 2400 South Dearborn Street; Victory 3520.

Dr. Grinker Appointed Chairman of Department. — Dr. Roy R. Grinker, head of the division of psychiatry at the University of Chicago, has resigned to become chairman of the department of neuropsychiatry at Michael Reese Hospital. In accordance with plans of the hospital for the development of investigative interest in nervous and mental diseases, clinical and laboratory facilities for research in neuropsychiatry are to be opened for Dr. Grinker's purpose. Application for a research fellowship in neuropsychiatry beginning July 1 should be made to him.

Society News.—At a meeting of the Chicago Ophthalmological Society, March 16, Dr. Edward V. L. Brown spoke on "Apparent Increases in Hyperopia Up to the Age of Nine," and Drs. Thomas D. Allen and Sanford R. Gifford discussed "Surgical Treatment of Retinal Detachment."——The Chicago Society of Allergy was addressed, March 16, by Drs. Milton B. Cohen, Cleveland, and Karl D. Figley, Toledo, on "Changes in Growth, Maturity and Mineralization Associated with Allergy" and "Iodized Oil in Intractable Asthma" respectively. Dr. Isadore Pilot discussed "Urticaria Due to Witte's Peptone."——Dr. Charles C. Higgins, Cleveland, addressed the Chicago Urological Society, March 26, on "Experimental Production and Solution of Urinary Calculi with Clinical Application and End Results."

INDIANA

Symposium on Pediatrics. — The Indianapolis Medical Society devoted two meetings, March 10 and 17, to a symposium on pediatrics. A discussion at the first session dealt with "Preventive Measures in Pediatrics" under the direction of Dr. Matthew Winters. Speakers were Drs. Herbert F. Call, Russell R. Hippensteel, Louis H. Segar and Howard B. Mettel. Clinical demonstrations by members of the staff of Riley Hospital made up the program for the second session.

Society News.—Drs. Robert M. Moore and Cyrus Clark, Indianapolis, discussed coronary disease before the Montgomery County Medical Society, February 20. —— A symposium on oral pathology and its relation to internal medicine will be presented before the Indianapolis Medical Society, March 31, by Drs. Jeane Thayer Waldo, James O. Ritchey and Rollin H. Moser. Dr. Harry L. Alexander, St. Louis, discussed "Principles of Diagnosis and Treatment of Allergic Disorders" before the society, March 3.——Dr. Robert M. Moore, Indianapolis, addressed the Northeastern Indiana Academy of Medicine at Kendallville, February 27, on coronary sclerosis.

Memorial to Physician. — Funds are being solicited to establish a memorial in honor of the late Dr. William L. Hughes, Indiana Harbor. The committee in charge believes it is "both fitting and proper that the life and services of Dr. Hughes be commemorated in some manner, and thus continue the memory of his splendid example of self sacrifice in and for the community." A statement issued by the committee reads: "We believe Dr. Hughes did a great work, especially for children, in a most unselfish manner, and no one was too poor to be denied his service and ability." Mr. William J. Murray, judge of the criminal court at Crown Point, is chairman of the committee; Rev. O. P. Manker is secretary and D. L. Mitchell, treasurer. Dr. Hughes died February 18.

KANSAS

Health at Kansas City.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended March 14, indicate that the highest mortality rate (24.3) appears for Kansas City, and the rate for the group of cities as a whole, 14.1. The mortality rate for Kansas City for the corresponding period last year was 14.2, and for the group of cities, 12.2. The annual rate for eighty-six cities for the eleven weeks of 1936 was 13.7 as against a rate of 12.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Society News.—At a meeting of the Ford County Medical Society in Dodge City, February 14, speakers were Drs. Laurence S. Nelson, Salina, on "Wertheim Interposition" and

George B. Kent, Denver, "Surgical Management of Malignant Lesions of the Colon and Rectum."——Dr. Raymond J. Dittrich, Fort Scott, addressed the Labette County Medical Society in Parsons, January 29, on "Treatment and Cure of Bone Infections."——The Washington County Medical Society was addressed in Washington, February 4, by Drs. Arthur R. Bryant and Robert W. Taylor, Beatrice, Neb., on "External and Middle Ear Infections" and "Common Ocular Pathology with Suggestions for Treatment" respectively.——At a meeting of the Tri-County Medical Society (Harvey, Marion and McPherson) in McPherson, February 12, Dr. Ralph Bowen, Oklahoma, discussed "The Practical Management of Allergic Problems as Seen in General Practice"; Dr. Clinton K. Smith, Kansas City, "Prostatic Hypertrophy and Electroresection of the Prostate," and Dr. Arthur Lloyd Stockwell, Kansas City, "Practical Considerations in Spinal Anesthesia."

MASSACHUSETTS

Physicians Meet with Legislators.—Members of the Massachusetts legislature from Worcester and vicinity were entertained at a dinner meeting by local physicians, February 21. Following the dinner, Dr. William F. Lynch, president of the Worcester District Medical Society, introduced Dr. Arthur W. Marsh, Worcester, a member of the legislative committee of the state society, as master of ceremonies. Various bills bearing on medicine and public health were discussed, and Dr. Charles E. Mongan, Somerville, president of the Massachusetts Medical Society, was a speaker.

Society News.—Dr. Frank H. Lahey, Boston, addressed the Arlington Doctors' Club, March 10, on "Diseases of the Thyroid and Parathyroids."——Dr. Kendall Emerson, New York, will speak at a joint meeting of the Massachusetts Tuberculosis League and the Hampden County Tuberculosis and Health Association in Springfield, April 8.——At a meeting of the Greater Boston Medical Society, January 7, speakers included Dr. Boris E. Greenberg on "Visualization of Postgonorrheal Complications."——Dr. Elliott C. Cutler, Boston, will address the William Harvey Society of the Tufts College Medical School, April 10, on "War Surgery." Dr. Alexander Lambert, formerly professor of clinical medicine, Cornell University Medical School, addressed the society, March 13, on "Therapeutics of Drug Habits."——At a meeting of the New England Heart Association in Worcester, February 24, Drs. Oliver H. Stansfield and Edward J. Halloran discussed "Effects of Contagious and Infectious Diseases on the Heart"; Dr. Frank B. Carr, "Acute Benign Pericarditis," and Dr. John J. Dumphy, "Coronary Symptoms in Pernicious Anemia."——The New England Physical Therapy Society was addressed in Boston February 19 by Leslie L. Campbell, Ph.D., for many years professor of physics, Simmons College, Boston, "Elementary Physics of Galvanism," and Drs. Frederick H. Morse, Hiram Houston Merritt and Claude L. Payzant, "Clinical Uses of Galvanic Current."

MICHIGAN

Personal.—Dr. John L. Burkhart, for many years city health officer of Big Rapids, has been appointed postmaster.——Dr. Robert F. Berry has been appointed superintendent of Morgan Heights Sanatorium, Marquette.

Society News.—Dr. John A. Hookey, Detroit, addressed the Monroe County Medical Society, February 20, in Monroe, on "Treatment of Eczema."——At a meeting of the Jackson County Medical Society in Jackson, February 18, Dr. Robert H. Durham discussed "The Protein Manifestations of Thyroid Insufficiency."——Speakers before the Detroit Otolaryngological Society, March 18, were Drs. Derrick T. Jr. and Harris H. Vail, both of Cincinnati, on "Ophthalmic Origin of Headache" and "Practical Considerations of Vidian Neuralgia" respectively.

New Dean at Wayne University.—Dr. Raymond B. Allen, associate dean of graduate studies, Columbia University College of Physicians and Surgeons, New York, has been named dean of Wayne University School of Medicine, Detroit. He succeeds Dr. Walter H. MacCraken, who resigned last year. Dr. William J. Stapleton Jr., who has been acting dean of the school, will become associate dean when Dr. Allen takes over his duties, May 18. Dr. Allen is 33 years of age. He graduated from the University of Minnesota Medical School, Minneapolis, in 1928.

The So-Called "Filter System" for Handicapped Children.—On January 28, eighty-two counties, all but one in the state, had reported the creation of a county medical society public relations committee, a medical filter and an economic filter, in accordance with an agreement between the Michigan State Medical Society, the Michigan Probate Judges Association and the Michigan Hospital Association. Under this system, afflicted and crippled children of the state will be examined and their economic status determined. Those able to pay will be "filtered" back to their family physicians; physicians caring for children unable to pay will be paid with funds from a specific appropriation by the state. The medical filter is a committee composed of three physicians selected by the county medical society to give a thorough physical examination to applicants for hospitalization, while an investigating committee representing the probate court and the county medical society will examine the applicants' economic status. No applicant will be committed by a probate judge unless he has received the proper certificate from an authorized member of the committee that the case is urgent. The state medical society was instrumental in drafting the filter system, which was adopted after it was made known that the funds appropriated by the state to care for afflicted and crippled children were running low. The law specifically states that physicians should be paid, but except for a brief period of a few weeks the work has been done free of charge on account of the lack of appropriated funds. The state has sufficient money to pay for this care, but the funds were not specifically allocated. The chief cause for complaint was the looseness of the system, which permitted any one to receive medical care at state expense, with the physician donating his services, it was stated.

MINNESOTA

Mayo Foundation Lectures.—Mr. L. R. Broster, London, gave a lecture at the Mayo Foundation, Rochester, February 27, entitled "Eight Years' Experience on the Surgery of the Adrenal Gland with Reference to the Adrenogenital Syndrome." Dr. Arthur G. Sullivan, Madison, Wis., lectured, February 10, on "Medicolegal Problems in Medical Practice."

Abortionist Sentenced.—Mrs. Ida Bare pleaded guilty in the district court of Ramsey County, March 4, to a charge of performing an illegal operation and was sentenced to a term of not to exceed two years at hard labor at the Woman's Reformatory at Shakopee. The operation resulted in the almost instantaneous death of the patient, it was stated.

Memorial to Dr. Johnson.—Plans are under way to establish a memorial to the late Dr. Herman M. Johnson, Dawson. Members of the Minnesota State Medical Association will be asked to contribute to a fund, which, it is expected, will be used to maintain a lectureship in medical economics. Dr. Johnson, who died last year, was president of the state association and medical superintendent of the Dawson Surgical Hospital. He was instrumental in passing the basic science law in Minnesota. In 1926 and 1927 and from 1929 to 1935 he was a member of the House of Delegates of the American Medical Association.

NEW JERSEY

Society News.—Dr. David W. Kramer, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, February 21, on "Advances in Treatment of Peripheral Vascular Disease."——Drs. Oswald S. Lowsley and Francis P. Twinem, New York, addressed the Bergen County Medical Society, Englewood, March 10, on "Some Aspects of Prostatic and Renal Surgery" and "Treatment and Prevention of Urinary Calculus" respectively. Dr. William G. Herrman, Asbury Park, a vice president of the Medical Society of New Jersey, spoke on activities of the state society.

NEW MEXICO

Society News.—At a meeting of the Grant County Medical Society, Silver City, in January, case reports were presented, among others, by Drs. Nathaniel D. Frazin and Russell C. Lane, Silver City, on encapsulated tumor of the lung; Marcellus McCreary, Fort Bayard, abscess following antisyphilitic injection, followed by negative Wassermann reaction. Dr. Frazin also presented a case of tuberculous infection of the metatarsal bones.

New Crippled Children's Hospital.—WPA funds have been assured for construction of a new hospital for crippled children at Hot Springs and ground was broken at a recent ceremony, *Southwestern Medicine* reports. Work is to start immediately on the hospital, which is to cost about $400,000. It is to have a capacity of eighty-four beds. All but one building will be of one story. There will be an outdoor swimming pool connected with an indoor treatment pool.

NEW YORK

Typhoid at County Home.—Three persons had died and eleven others were ill in an outbreak of typhoid at the Genesee County Home, near Batavia, newspapers reported March 15. It was suspected that the source of the infection was creek water used for drinking.

Dr. Butler Appointed to State Hospital Service.—Dr. Ethan Flagg Butler, Elmira, has been appointed chief thoracic surgeon for the state tuberculosis hospital service. After the opening of the Biggs Memorial Hospital, Ithaca, Dr. Butler will make his headquarters there, but for the present he will divide his time between the Oneonta and Mount Morris hospitals. Dr. Butler has at various times served on the staffs of Walter Reed General Hospital, Washington, D. C., Bellevue Hospital, New York, and Robert Packer Hospital, Sayre, Pa. He was president of the American Association for Thoracic Surgery in 1931.

New York City

WPA Funds for Venereal Disease Campaign.—An appropriation of $100,000 has been approved by the Works Progress Administration to be used to aid the department of health in a campaign to control venereal disease. The funds will provide equipment and supplies and work for 127 persons, of whom ninety-seven are physicians and nurses, it was said. A pavilion at the Kingston Avenue Hospital, Brooklyn, has been set aside by the department of hospitals for treatment of persons with venereal disease, and a special bureau for control of these diseases has been established in the health department under the direction of Dr. Charles Walter Clarke.

Salmon Memorial Lectures.—The Salmon Committee on Psychiatry and Mental Hygiene announces that the fourth series of Thomas William Salmon Memorial Lectures will be presented by Dr. Samuel T. Orton, professor of neurology and neuropathology, Columbia University College of Physicians and Surgeons, April 10, 17 and 24, at the New York Academy of Medicine. The general subject of the lectures will be "Developmental Disorders of the Language Faculty and Their Psychiatric Import." Individual lectures will be: April 10, "Language Losses in the Adult as the Key to the Developmental Disorders in Children"; April 17, "The Syndromes of Disorder in the Development of Language," and April 24, "Treatment and Psychiatric Interpretation."

Edgar Sydenstricker Dies.—Edgar Sydenstricker, scientific director of the Milbank Fund and for many years chief statistician of the U. S. Public Health Service, died March 19 of cerebral hemorrhage, aged 54. He was born in China and came to the United States in 1896. After graduating from Washington and Lee University in 1902 Mr. Sydenstricker was a teacher and newspaper man for several years. From 1908 to 1915 he directed industrial community studies for the U. S. Immigration Commission and the U. S. Commission on Industrial Relations and in the latter year was appointed to organize the statistical work of the public health service. He was one of the organizers of the health section of the League of Nations in 1923 and 1924. Since 1925 Mr. Sydenstricker had been in charge of research and public health activities of the Milbank Fund and in April 1935 became administrative head with the title of scientific director. He was a member of President Hoover's Committee on Social Trends in 1931-1932 and of President Roosevelt's Committee on Economic Security in 1934-1935.

NORTH CAROLINA

Society News.—Dr. Hugh Cabot, Rochester, Minn., addressed the Forsyth County Medical Society, Winston-Salem, February 17, on "Tumors of the Kidneys."——Speakers at a meeting of the Fourth District Medical Association in Wilson, February 11, were Drs. Isaac H. Manning, Chapel Hill, on hospital insurance; Malory A. Pittman, Wilson, pelvicephalometry, and Hugh A. Thompson, Raleigh, traumatic surgery.

OHIO

Personal.—Dr. Jonathan Forman, Columbus, has been appointed editor of the *Ohio State Medical Journal* to succeed Dr. Leslie L. Bigelow, Columbus, who resigned in December. Dr. Forman graduated from the old Starling-Ohio Medical College in 1913 and served on the faculty after the school was merged with Ohio State University College of Medicine.——Dr. Donald E. Yochem, Columbus, has been appointed medical director of the Cooperative Life Insurance Company of America.

Outbreak of Gastro-Enteritis.—About 1,500 cases of gastro-enteritis were reported to the state department of health, February 20, from Coshocton. According to an investigation made by Dr. William P. Johnson of the health department, Columbus, symptoms were nausea followed by vomiting, cramps, diarrhea, slight fever, chilliness and aching. The victims recovered within from twenty-four to thirty-six hours. The city water was suspected of being the source, as no other common factor was found. However, samples sent to the state laboratory showed no evidence of contamination.

Society News.—Dr. Robert A. Lyon, Cincinnati, addressed the Clermont County Medical Society, Williamsburg, recently on advances in treatment of contagious diseases.——Dr. Stanley E. Dorst, Cincinnati, presented a paper on "Specific Serum Treatment of Pneumonia" before the Hancock County Medical Society, Findlay, February 6.——Dr. Jay Arthur Myers, Minneapolis, addressed the Lorain County Medical Society, Lorain, February 11, on diagnosis and treatment of tuberculosis.——Dr. Charles M. Clark, Akron, discussed "Infections of the Nose and Throat as Related to Diseases of the Lower Respiratory Tract" as guest of the Portage County Medical Society, Ravenna, February 6.——Drs. Louis Feid Jr. and Charles R. Deeds, Cincinnati, addressed the Stark County Medical Society, Canton, February 4, on "Uterine Bleeding" and "Rectal Bleeding" respectively.——Dr. Chesterfield J. Holley, Wheeling, W. Va., discussed "Significance of Anal and Rectal Pain" at a meeting of the Belmont County Medical Society, Bellaire, February 6.

PENNSYLVANIA

Flood Stricken Town Quarantined.—The town of Sunbury, in the flood area, was placed under quarantine by the state health department, March 20, when ninety cases of scarlet fever, diphtheria, measles and chickenpox were reported. Three fourths of the town was said to be under several feet of water, with 4,000 persons homeless. Physicians, nurses and relief workers were said to be using motorboats, rowboats being useless in the swift currents. National guardsmen barred all but relief workers from the town.

Society News.—Dr. Russell L. Haden, Cleveland, addressed the Cambria County Medical Society, Johnstown, March 12, on "Study and Treatment of Anemia."——Dr. Frank R. Hanlon, Wilkes-Barre, addressed the Northampton County Medical Society, Easton, February 21, on "Management of Acute Empyema."——Drs. Harry J. Robb, DuBois, and Roger E. Phillips, Philipsburg, among others, addressed a joint meeting of the Centre and Clearfield County medical societies in Clearfield, February 20, on "Angina Pectoris and Coronary Occlusion" and "Office Management of Diabetes" respectively.

Philadelphia

Annual Clinical Lectures.—Mercy Hospital will present its fourth annual clinical lectures March 30-April 3, two each afternoon. Following are the speakers:

Monday: Drs. Howard Childs Carpenter, Value of Periodic Physical Examinations of Children; DeForest P. Willard, Infantile Paralysis.
Tuesday: Drs. Edward A. Schumann, Difficult Labor; Chevalier L. Jackson, Diseases of the Esophagus and Stomach—Endoscopically Considered.
Wednesday: Drs. Hermann Prinz, Common Diseases of the Oral and Mucous Membrane; David Riesman, Diagnosis and Treatment of Early Circulatory Failure.
Thursday: Drs. Herbert L. Northrop, Miscellaneous Highlights of Surgery; Willard H. Kinney, Urolithiasis.
Friday: Drs. Catherine Macfarlane, Dysfunctional Uterine Bleeding; Randle C. Rosenberger, Diseases Now Considered as Due to Filtrable Viruses.

Society News.—Speakers before the Pathological Society of Philadelphia, March 12, were Drs. Max B. Lurie, on "Mechanism of Immunity in Tuberculosis: The Rôle of Some Cellular and Acellular Factors"; Lawrence W. Smith, "Certain Pathologic Changes in the Heart in Scarlet Fever," and Virgil H. Moon and David R. Morgan, "Pathologic Features Following Shock with Delayed Death."——Dr. Walter Freeman, Washington, D. C., addressed the Philadelphia Psychiatric Society, March 13, on "Constitutional Factors in Relation to Mental Disease."——Three Pittsburgh physicians presented the program of the Philadelphia County Medical Society, March 25, on diseases of the thyroid. Dr. William J. Fetter discussed incidence and diagnosis; Dr. William L. Mullins, cardiac manifestations, and Dr. John P. Griffith, surgical treatment.——Drs. Robert A. Kimbrough Jr. and Robert M. Shirey presented a "Statistical Survey of Eclampsia" before the Obstetrical Society of Philadelphia, March 5, and Dr. Douglas P. Murphy spoke on "Reproductive Characteristics of Families Having Malformed Children."——James L. Weatherwax, A.M., and Charles Robb of the University of Pennsylvania Graduate School of Medicine, among others, addressed the Philadelphia Roentgen Ray Society, March 5, on "Saturation Technic as a Procedure in Giving Radiation."

RHODE ISLAND

Society News.—Drs. John T. Farrell and James Murray Beardsley, Providence, addressed the Providence Medical Association, March 2, on "Roentgenologic Differential Diagnosis of Nontuberculous Diseases of the Lung" and "Bronchiectasis" respectively. Drs. Soma Weiss, Boston, and Russell S. Bray addressed the association, February 3, on "Clinical Significance and Management of Syncope" and "Nontropical Sprue" respectively.——The Rhode Island Medical Society will hold its annual meeting June 3-4 at Providence.

Bills Introduced.—S. 179 proposes to grant liens to physicians, nurses and hospitals, treating persons injured through the fault of others, on judgments, settlements or compromises accruing to the injured persons by reason of their injuries. S. 181 proposes to restrict the sale of those proprietary medicines and ordinary household remedies and drugs, to which the provisions of the pharmacy practice act do not now apply, to shops and stores specifically so licensed by the chief of the division of narcotic drugs and pharmacies. H. 780 proposes to repeal the present law requiring the licensing of maternity hospitals and to enact in its stead a new law requiring maternity hospitals to be licensed annually by the state department of public health. The bill proposes that "any person who receives for care and treatment during pregnancy or during delivery or within ten days after delivery, any woman except women related to him or her by blood or marriage, shall be deemed to maintain a maternity hospital." No such license to conduct such a hospital can be issued by the department of public health until after careful investigation it finds the hospital premises to be in a fit sanitary condition. The department is to be given the authority to issue general regulations and rules for the conduct of all such hospitals. Every birth occurring in a maternity hospital must be attended by a legally qualified physician or midwife. H. 795, to amend the laws relating to coroners and medical examiners, among other things proposes that on the passage of the bill "the terms and services of the several medical examiners now holding office shall be deemed to have ceased and terminated, and thereupon the attorney general shall appoint medical examiners." H. 826 proposes to require, as a condition precedent to the obtaining of licenses to wed, both parties to proposed marriages to present certificates from licensed physicians that they are not afflicted with syphilis or in a stage of that disease that may become communicable.

WASHINGTON

Personal.—Dr. John W. Darrough, Everett, was recently appointed health officer of that city.——Dr. John W. Stevenson, Hoquiam, has been appointed health officer of Grays Harbor.

Society News.—Dr. Alexander B. Hepler, Seattle, addressed the Walla Walla Valley Medical Society, Walla Walla, March 12, on "Urology from the General Practitioner's Viewpoint."——Drs. Charlton E. Hagyard and Harry L. Leavitt addressed the King County Medical Society, Seattle, March 16, on "Acute Pancreatic Necrosis" and "Scoliosis" respectively.——Dr. Paul G. Flothow, Seattle, addressed the Clallam County Medical Society, Port Angeles, January 22, on the sympathetic nervous system.——Drs. William H. Goering, Tacoma, and Ira O. McLemore, Seattle, addressed the Cowlitz County Medical Society, Longview, February 11, on orthopedic surgery with reference to crippled children.——Dr. Delmar F. Bice, Yakima, president of the Washington State Medical Association, addressed a joint meeting of the Whatcom and Skagit county medical societies in Bellingham, February 3, on state medicine.——Dr. James M. Bowers, Seattle, presented a paper on diseases of the chest before the Yakima County Medical Society, Yakima, February 10.

WEST VIRGINIA

Society News.—Dr. William F. Rienhoff Jr., Baltimore, addressed the Ohio County Medical Society, Wheeling, January 31, on "Surgical Treatment of Diseases of the Bronchi and Lungs."——Drs. Edward J. Van Liere and Frederick R. Whittlesey addressed the Monongalia County Medical Society, Morgantown, February 4, on "Effect of Low Oxygen Tension on Movements of the Stomach" and "Low Oxygen Tension in Disease" respectively.——The Central West Virginia Medical Society met in Sutton, February 27, with the following speakers, all of Columbus, Ohio: Drs. Samuel D. Edelman, "Preventive and Curative Measures in Diseases"; Frank W. Harrah, "Transurethral Resections of Vesical Neck Obstructions," and William B. Morrison, "Diagnosis and Treatment of Carcinoma of the Stomach."——Dr. Claude C. Coleman, Richmond, Va., addressed the Harrison County Medical Society, Clarksburg, February 5, on diagnosis and treatment of brain tumors.

GENERAL

Prevalence of Meningitis.—Three hundred and seven cases of meningococcic meningitis were reported to the U. S. Public Health Service during the week ended February 29; in the corresponding week of 1935, 154 cases were reported. Seven deaths had occurred and strict quarantine was imposed in Texarkana, Texas, February 23, according to newspaper accounts. Eight deaths had occurred in Quincy, Ill., the Chicago *Tribune* reported March 17. Thirty cases were reported in North Carolina during January and February, with several deaths. Work was suspended at a coal camp in McCreary County, Ky., March 2, after two miners had died of meningitis. McCreary is in the southeastern section of the state near Harlan County, where a serious epidemic has occurred. In Charleston, S. C., forty-seven cases have been hospitalized at Roper Hospital, thirteen from the county, it was reported March 3. Several schools in the county were closed.

Society News.—Dr. Edwin M. Neher, Salt Lake City, was chosen president of the Western Ophthalmological Society at the third annual meeting in Pasadena, Calif., January 25. Dr. Frederick C. Cordes, San Francisco, was named vice president, and Dr. Andrew J. Browning, Portland, Ore., secretary. The next annual session will be held in Denver, in connection with the summer course conducted by the Colorado Congress of Ophthalmology and the Colorado University School of Medicine in July 1937. Speakers at the recent meeting included Drs. John E. Weeks, Portland, Ore., on "The Amblyopia of Arsenical Therapy"; Harold F. Whalman, Los Angeles, "Hodgkin's Disease of the Eye," and David O. Harrington, San Francisco, "The Optic Radiation in the Temporal Lobe, with Case Report of Perimetric Studies in Complete Removal of the Temporal Lobe."——The American Association on Mental Deficiency will hold its sixtieth annual meeting at the Hotel Jefferson, St. Louis, May 1-4. The Friday sessions will be devoted to general and sociological aspects of mental deficiency, while the Saturday sessions will be given over to psychologic and educational topics with stress on educational disabilities. Monday will be devoted to research activities, medical aspects and administrative problems in mental deficiency. Additional information may be obtained from the secretary, Dr. Groves B. Smith, Godfrey, Ill.——Dr. James H. Means, Boston, was chosen president-elect of the American College of Physicians at the annual session in Detroit, March 5, and Dr. Ernest B. Bradley, Lexington, Ky., was installed as president. Vice presidents are Drs. O. H. Perry Pepper, Philadelphia, David P. Barr, St. Louis, and Walter L. Bierring, Des Moines. The next meeting will be in St. Louis.

Medical Bills in Congress.—*Changes in Status:* S. 2625 has passed the House, extending the facilities of the Public Health Service to seamen on government vessels not in the military or naval establishments. H. R. 3629 has been reported to the Senate, authorizing the acquisition of additional land for the use of Walter Reed General Hospital. *Bills Introduced:* S. 4310, introduced by Senator Black, Alabama, proposes to appropriate $1,750,000 to erect, in the state of Alabama, a hospital for the diagnosis, care and treatment of neuropsychiatric patients entitled to hospitalization under the World War Veterans' Act, as amended. H. J. Res. 527, introduced by Representative O'Leary, New York, proposes to make the facilities of the United States Marine Hospital at Stapleton, N. Y., available for World War veterans in Richmond County, N. Y. H. R. 11826, introduced by Representative Hoeppel, California, proposes to reenact all laws in effect March 19, 1933, granting hospitalization and domiciliary care to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection. H. R. 11827, introduced by Representative Secrest, Ohio, proposes to establish a Bureau of Veterans' Affairs in the Department of the Treasury and to revise generally the laws relating to veterans. The bill, among other things, would provide domiciliary and hospital care, including medical treatment, to all retired officers and enlisted men of the United States army, navy, marine corps or coast guard who served in any war, irrespective of the origin of the disease, disability or defect necessitating domiciliary or hospital care, and irrespective of the financial status of that officer or enlisted man. Furthermore, domiciliary and hospital care, including medical treatment, would be furnished to any veteran, not dishonorably discharged, who is unable to defray the expenses thereof, within the limits of the facilities of the Veterans' Administration, irrespective of the origin of the disability, disease or defect. Any individual who served overseas as a contract surgeon of the army would be entitled

to the benefits proposed by the bill. H. R. 11951, introduced by Representative McGehee, Mississippi, proposes to compensate persons disabled by the use of improperly made jamaica ginger.

Government Services

Annual Report of the Navy

The leading cause of death in the U. S. Navy during 1934 was motor vehicle accidents, according to the annual report of Surgeon General Rossiter. Fifty of the 299 deaths reported were attributed to these accidents, which also headed the list in 1930, 1931 and 1932. In 1933 the leading cause of death was aeronautic accidents. An increase was noted in the general admission rate: 57,271 admissions from all causes gave a rate of 523.58 per thousand persons in the navy. This rate compared with 477.03 per thousand reported in 1933, the lowest rate ever recorded. The increase in 1935 was due chiefly to increases in acute catarrhal fever, acute bronchitis, measles, German measles and bacillary dysentery. From the standpoint of major injuries there were no disasters in 1934. There were 473 cases of influenza reported with no deaths; the admission rate was 432 as compared with 364 in 1933. The admission rate for wounds and injuries was 64.32 per thousand as compared with 63.21 per thousand for 1933. There were 6,995 admissions for accidental injuries and poisonings in 1934 as compared with 6,800 in 1933; 26 per cent of the injuries were sustained by naval personnel when absent from their commands. Forty-eight of the fifty deaths chargeable to motor vehicles were the result of injuries received while on leave or liberty. Athletics and recreative sports were responsible for 1,412 admissions and six deaths. Suicide was responsible for forty-six fatalities and drowning for twenty-eight. There were 377 admissions for mumps during the year, 360 for measles, 1,118 for German measles, and four cases of diphtheria. Acute catarrhal fever was responsible for 10,910 admissions as compared with 6,569 in 1933, giving a total of 51,727 sick days. There were forty-nine admissions for scarlet fever. No case of smallpox was reported. There were 178 admissions for tuberculosis. There were 39,783 sick days reported for all forms of tuberculosis. Seventeen deaths occurred from this cause. Malaria was responsible for 220 original admissions with 6,039 sick days; in fifty-nine cases the disease was said to have existed prior to enlistment. A total of 500 admissions was recorded for Vincent's angina, making the admission rate 457 per hundred thousand persons. This is the lowest admission rate since 1924, the first year in which cases were reported under this title. There were eighty-four admissions for dengue, sixty for amebic dysentery and seven for typhoid. Venereal diseases occupied second place among all causes of morbidity and contributed the largest number of sick days of any group. They were responsible for 17.24 per cent of admissions for all causes and 14.46 per cent of the total number of sick days. The admission rate for venereal diseases was 90.28 per thousand, a decrease of 11.88 per cent from the 1933 rate. There were 166,891 sick days reported for this group of diseases. During 1934 there were 1,633 persons invalided from the service. A total of 1,043,481 treatment days in all naval hospitals for all classes of patients was recorded, including 807,829 treatment days of navy personnel, 70,738 of Veterans' Administration patients, and 164,914 treatment days of all other supernumeraries. The total does not include 43,735 treatment days on the hospital ship *Relief*, 2,229 treatment days for tuberculous patients at the naval unit, U. S. Army Fitzsimons General Hospital, Denver, and 13,350 treatment days for insane patients at St. Elizabeth's Hospital, Washington, D. C. For the year ended June 30, 1935, there were 832 members in the medical corps, sixty-two of whom were on duty with the Civilian Conservation Corps. There were twenty-six separations from the service during the year, fourteen by retirement, six by resignation and six by death.

Federal Grants for Health Work Approved

The allocation of $3,333,000 to the various states from funds authorized under the Social Security Act has been approved for extension of public health work, it is reported. Allocations thus far made include $225,851.58 for New York, $78,555.48 for New Jersey, $37,007.98 for Connecticut and $179,266.32 for Pennsylvania and cover amounts for the remainder of the current fiscal year. They were determined on the basis of population, special health problems and financial needs.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 22, 1936.

The Use of Analgesics by Midwives

As more than half the labors in this country are attended by midwives, the problem of a safe and effective method of analgesia has arisen. In a previous letter it was reported that a gynecologist, Mr. L. C. Rivett, had worked out a method of chloroform analgesia by means of 20 minim (1.25 cc.) capsules, to be crushed and administered by the midwife or by the patient herself during severe pains. This method has been used in a large number of cases and has been claimed to be quite safe. However, this claim has now been rejected by a committee appointed by the British College of Obstetrics and Gynecology to investigate the question whether there is any safe method of analgesia which can be used by a midwife in the absence of a physician. The investigation was made in hospitals, because there adequate medical supervision and facilities for the necessary observation and recording were available. These were for the most part maternity hospitals or departments attached to medical schools. The records of nearly 10,000 cases of analgesia were studied and classified into three main groups: (1) nitrous oxide and air, (2) chloroform, (3) paraldehyde.

NITROUS OXIDE AND AIR

Nitrous oxide and air were administered by the Minnitt apparatus in 3,238 cases. There were three deaths, which were in no way due to the anesthetic. The conclusion is that the apparatus is safe for midwives in hospitals, provided recent examination by a physician has revealed no contraindication. Its use should be restricted to midwives who are specially trained and who have shown themselves capable. The analgesia is satisfactory in a high proportion of cases. Further experience is necessary before suitability for domiciliary practice is proved.

CHLOROFORM

In 4,975 cases, chloroform analgesia was used alone or was supplemented by general anesthesia. There were six deaths. Chloroform is held directly responsible for one of these and to be an important factor in two others, but in no way responsible in the remaining three. The stillbirth rate in the analgesic cases was 2.6 per cent, which is held not to indicate any increased danger to the fetus. The conclusion is reached, "with regret," that chloroform by any method should not be used by midwives acting alone. The immediate and delayed dangers occurred in this investigation. The committee does not consider it possible to guard against such occurrences if the administration is in inexperienced hands.

PARALDEHYDE IN OIL BY RECTUM

Technical difficulties in administration, the need for careful selection of cases and the choice of time for injection, the variable action, and inadequate analgesia at the time of birth, are objections to the use of this method by midwives.

Scholarships for the Victims of Political Persecution

Prof. Gilbert Murray states in the Oxford *Mail* that an appeal will shortly be issued for funds to create an institution to act as a successor to the British Academic Assistance Council. One of its functions will be to administer special research fellowships for displaced university teachers. The council was formed three years ago, under the presidency of Lord Rutherford, after the dismissal of 1,000 university teachers in Germany. "Since its advent to power," says Professor Murray, "the Nazi party has dismissed about one sixth of the members of univer-

sity staffs either because they were 'politically unreliable' or were 'non-Aryan.' It is instructive that only about one third of the German scholars whom the Council has assisted have been professing Jews, while one third of the 'non-Aryans' have been baptized Christians." Of the displaced German scholars, 700 sought refuge abroad. They included specialists in every academic subject, from Nobel prize winers to young lecturers of only a few years' university experience. By public appeals, to which university teachers in particular have responded generously, the Academic Assistance Council and other academic committees have raised funds for the temporary maintenance of German refugees as research guests in universities. During this period the scholars themselves and the academic committees have discovered throughout the world positions of a more permanent character, which now amount to 382. Thus more than half of the exiles have secured permanent appointments. Though so much has been done, Professor Murray says it would be disastrous if complacency led to any slackening of effort. Some 150 refugee scholars are still not yet established. Though negotiations with South American countries may lead to the appointment of nearly 100 scientists in the near future, it is becoming increasingly difficult to find openings. He concludes: "For the next five or ten years a deliberate expansion of the universities, by the creation of supernumerary posts, is necessary as an effort to preserve that large section of organized learning which in Germany and elsewhere is threatened with destruction by political intolerance."

The Mystery of a Child Born with a Foreign Body in the Heart

The inquest on the body of a baby that died a few hours after birth has attracted attention in the lay as well as the medical press. A small piece of metal was found in the heart, for which no satisfactory explanation seems to be possible. The reports in the lay press of such an extraordinary occurrence might be dismissed as unreliable, though they are quite circumstantial; but the case is authenticated by a letter to the *Lancet* from the two physicians concerned. They write that they are fully aware of the incredible nature of the case but are impelled to place on record what they believe to be a unique occurrence in the annals of pathology. A female child was born to a primipara, who had an uneventful gestation and a normal labor. The child appeared normal in every way but died suddenly some hours after birth for no apparent reason. A necropsy was performed with meticulous care by one of the physicians in the presence of the other, who was assisting and observing closely. The mortuary attendant was also a witness. Nothing was found until the heart was removed and laid on the postmortem slab. It was dissected with a scalpel and a pair of surgical scissors, which were unplated. When the right ventricle was opened a small bright object was seen lying free within the cavity and was extracted under three pairs of curious eyes. "It was a small piece of metal resembling brass or gilded tin, appearing to be a circlet of sorts, folded upon itself, with regular serrations along the edge and measuring roughly 3 by 2 mm. It looked something like the claw setting of a toy jewel ring, such as is found in Christmas crackers."

The physicians emphasize the fact that there was no possibility of the object having been dropped by one of them as they bent over the heart, or of its having been shed by one of the instruments used, or of its having been picked up from the postmortem table. They naturally examined these possibilities and excluded them. They suggest that the foreign body was lying within the uterus at the time of conception and that the growing ovum enfolded it, so that it finally came to be where it was found. When the placental circulation ceased and the child's heart "took over," it caused some momentary effect which produced syncope. They admit that this explanation seems fantastic and they would welcome alternative suggestions. They do not say anything about contraceptive practices by the mother, which their explanation may suggest, or about having the object examined by a skilled metallurgist, which its importance seems to require. It might be added that any suggestion that the object was in some way accidentally introduced into the heart post mortem is open to the objection of leaving the sudden death unexplained.

PARIS

(From Our Regular Correspondent)

March 6, 1936.

Sputum Cultures for the Diagnosis of Tuberculosis

Petroff, said Professor Bezançon and his co-workers before the Académie de médecine, initiated sputum cultures, but this method did not become efficient until the studies of Petragnani and Löwenstein. Sputum cultures are simpler, less expensive and better adapted to the mass diagnosis of tuberculosis than is the inoculation of guinea-pigs. Bezançon followed the Petragnani technic. The medium is mixture of milk, peptone, starch and eggs. The sputum is first homogenized and then centrifugated. The cultures are made from the most purulent part of the sputum, and a special feature of Bezançon's technic is to sew between twelve and twenty-five culture tubes. The number of tubes showing colonies is an indication of the abundance of bacilli in the sputum. Bezançon's statistics include 861 cases, in 743 of which no bacilli could be found either by inoculation or by culture. In 118 the cultures were positive. The importance of sputum culture is emphasized by the fact that in a group of 300 people, apparently healthy and hard workers, six were bacillus carriers and in three the presence of bacilli was found only by culture. Two objections arise: first, these bacilli might be nonpathogenic. Research showed, however, that they were pathogenic and that they were authentic Koch bacilli. Second, these bacilli might come from the upper respiratory tract. Evidence of the pulmonary origin of the bacilli was given by the examination of a large group of nurses of the tuberculosis clinic at the Saint Antoine Hospital, none of whom had a positive culture of the sputum or the saliva. However, the presence of bacilli in sputum is to be interpreted only in connection with other conditions; it is not absolute evidence but should lead to a special and complete examination of the patient.

The Prophylaxis of Measles

Saint Etienne, one of the most crowded towns of France, has more than 200,000 inhabitants, the majority of whom are poor workers with lots of children; slums and the lack of personal hygiene and sanitation flourish in Saint Etienne. Measles is endemic and the mortality is high. Dr. Poulain, health officer of the town, in order to fight this plague, sought the collaboration of town officials, the newspapers, the military and civil physicians, and the school teachers. Poulain's plan was first to keep babies under 2 years of age away from the disease and secondly to protect the older children against complications. To stop the spread of measles, Poulain discontinued the babies' outdoor service and this was given in the homes. Generally speaking, he tried to close every place where babies could be congregated. For the older children, who could not easily be kept out of schools and other meeting places, Poulain initiated a systematic use of convalescent serum. Fortunately, the 1934 epidemic started in the garrison; so he could have a supply of serum. He was strict in the selection of donors, excluding every one having any fever or a recurrent attack of the measles. Every donor was tested for syphilis and tuberculosis. Even with such limitations, he succeeded in obtaining from seventeen donors about 800 cc. of serum. Unfortunately, when this stock was

exhausted he was unsuccessful in persuading nonmilitary citizens to give their blood or that of their children. In the last months of the epidemic he was obliged to advise injection of the whole blood of some convalescent relative. Though this method was uncertain, the mortality in 1935 was greatly reduced.

The Third Congress of Comparative Pathology

The third Congress of Comparative Pathology will take place in Athens, Greece, April 15-18. The president is Professor Bensis of Athens and the general secretary is Dr. Codounis of Athens. In the Section of Human Medicine, five subjects will be discussed: (1) echinococcoses, (2) nephroses and amyloses, (3) leishmaniases, (4) spirochetoses and (5) avitaminoses. In the Section of Plant Pathology the great subject of immunity in plants will provide an important discussion, judging by the number of essayists, who come from ten different nations. The Société de pathologie comparée sponsors this congress. The address of the committee of the congress is in Paris, 7 rue Gustave Nadaud.

Death of Professor Fredericq

The death is announced of Professor Fredericq of Liége, who was elected professor emeritus last year. He was 85 years of age and had been professor of physiology in the University of Liége since 1879. He had been a member of the Académie royale de médecine de Bruxelles since 1894. Fredericq combined skill in experimentation with the outlook of a publisher. He was an excellent teacher, whose courses attracted many foreign students. He worked chiefly on the physiology of the heart, the venous circulation and the nervous system. His greatest glory was the *Archives internationales de physiologie*, which he founded and which was the most accurate and exhaustive compilation of physiologic material in the world. His son has succeeded him both in his title of professor and as the director of the *Archives*.

BERLIN

(From Our Regular Correspondent)

Feb. 1, 1936.

The Importance of Geomedical Knowledge

Professor Schittenhelm, the Munich internist, has developed from data gathered in various parts of Germany an interesting geomedical point of view (*anschauung*). Diseases frequently present differing characteristics even in the locality of first appearance. For example, in Kiel on the Baltic Sea diphtheria is infrequent and mild, whereas from Berlin or Munich extremely severe cases are reported. Scarlet fever is rare at Kiel, and it appears in Geneva, Switzerland, in such a mild form that it is there considered no more dangerous than measles. Infection from Brucella abortus is frequently found in Schleswig-Holstein and in Denmark but seldom in Bavaria, although in the latter region the cattle may be infected with Brucella. In Kiel, mesenteric tuberculosis is frequent among children; in Basel it is never found. Perhaps differing types of bread and milk ingestion are here of importance. In Geneva, tuberculosis takes a more exudative, diffuse and speedier course than in Kiel; more tuberculous meningitis also is encountered.

Remarkable differences exist among diseases of the blood. The disappearance of chlorosis is connected with better hygiene among young girls; on the other hand, increase in the number of cases of thrombosis and leukemia was observed more frequently in northern and eastern Germany than in Bavaria, for example. The same is true of pernicious and essential anemias and hypochromemia. The increase in cases of pernicious anemia after the World War is well known. Pneumonia of the upper lobe is relatively infrequent but of a severe type at Kiel; at Munich it is frequent but relatively mild. One is astonished at the large number of patients presenting circulatory disturbances at Munich; for example, tricuspid insufficiency with positive hepatic pulsation, a condition rarely encountered at Kiel. Primary sclerosis too is found at Munich. Apoplexy, atherosclerosis and thrombosis are more frequent at Basel than at Kiel. Gastric ulcer and biliary disorders likewise present distinct regional differences. Cirrhosis of the liver shows the strangest distribution of all; alcohol cannot alone be guilty of causing this disease, when in Russia, Hungary and other countries the rate is less than 1 per cent. Psoriasis is frequent in the north. It decreases toward the south and is quite rare in the tropics. Constitutional factors also should be considered, for example, as a cause of prolapses among females. In Vienna this condition results from relaxation of the muscles of the pelvic floor, whereas in Berlin insufficiency of connective tissue of the supporting apparatus is held responsible. Interesting too is the frequently observed decrease from east to west in the birth rate of males. On rare occasions gout is still encountered in England; in Basel it never appears. Obesity is more frequently observed among Lapps and Netherlanders. The significant causative factors are, for the Lapps, excessive ingestion of fat and lack of physical exercise; for the Netherlanders, good nutrition. For diabetes no regional differences are observable. The contrast between the nature of thyroid disturbances at high and low altitudes is well known. Goiter is more prevalent in the highlands; the lowlanders are more subject to thyrotoxicosis and to exophthalmic goiter. Numerous other regional differences in thyroid diseases are found. For example, in Switzerland goiter frequently is accompanied by cretinism, but this is not true for the Netherlands. In Switzerland goiter more frequently is found among the poorer classes than among the rich; in the Netherlands there is no such difference. An endemic goiter of the North German lowland is recognized; a similar condition is found in Norway. The Swiss goiter of puberty often goes into exophthalmic goiter. The thyroid body may thus be influenced by numerous factors of nutrition: climate, living conditions and so on. Regional differences in reactions to iodine are observable. There is perhaps a regional difference in the effect of liver preparations as well. Digitalis must be administered with greater caution at Kiel than at Munich. The part played by racial factors in these differences is as yet unknown to science.

A Revival of Medical History

A reaction has set in against analytic medical research and the elaborate diagnostic and therapeutic methods which during the last decade had come to assume such large proportions. The endeavor has been to master the technic of medical practice through complicated diagnostic and therapeutic methods which stressed the study of separate parts. Now the cry has gone up that the patient should be regarded as an entity. Psychic treatment of the patient by the physician comes more to the fore and greater value is attached to hereditary predispositions and constitutional differences, while time honored household remedies of proved worth seek a place beside the products of chemical industry. Although medicine will not cease to be related to the natural sciences, it is henceforth to be considered in conjunction with the age old traditional art of healing, which had its origin (1) in the impulse to help and (2) (like all the arts) in the impulse to create. The trend developed in Germany soon after the World War, and there is no doubt that political revolution has given it strength and form. This tendency to go back to the old for enlightment and to consider science as linked with national political concepts has given a great impetus to research in medical history.

Significant in this connection is the appearance of a fictional biography of Theophrastus Paracelsus. In this three volume novel by Kolbenheyer (the third volume of which is significantly entitled "The Third Reich"), Paracelsus, formerly considered

primarily a quack and a charlatan, is depicted as a reformer on the grand scale, as the founder of a Germanic school of medicine based on experimentation and intuition. This school broke away from the inflexible tradition of galenic science and from the upper schools (predominantly Italian) of humanistic medicine that existed in former times. Now, more than ever, that earlier popular interest in primitive medicine has been revived. Men outside the regular school are coming in for consideration. Thus Gumpert portrays the life of Hahnemann, the founder of homeopathy. Accounts of historic medical struggles (for example, the unappreciated fight waged by Semmelweis against puerperal fever or the official opposition encountered by Schleich, the inventor of local anesthesia) are revived in publications of all kinds.

As the approximate number of readers of the new literature is not known, it is difficult to determine to what extent the layman may be induced to take an interest in his own body, in contemporary scientific progress and in those questions of hygiene which have become objects of governmental and political concern.

The new literature comes to the physician without entailing any expenditure of money on his part. It serves as propaganda for the chemical and pharmaceutical industry. Formerly the physician's interest and affection were secured by all sorts of little gifts. There came to him unbidden and free of charge thermometers, fountain pens, cigaret cases, pocket scissors and like articles, all discreetly stamped with the name of the manufacturer or dealer. When this type of advertising propaganda was banned by official decree, other sorts of gifts had to be substituted, articles which would bear some relation to the medical profession and be at the same time novel and acceptable. With an accurate comprehension of the zeitgeist, the manufacturers pressed into service the history of medical science, conscious of but blinking the fact that the movement toward the past possessed potential hostility toward modern industrial technic. The periodicals in pamphlet form published by the great pharmaceutical houses (such as Bayer, Schering-Kahlbaum, Normark Werke) and which reproduce accounts in extract form of clinical experimentation with their products, virtually all came to carry historical material dealing with ethnologic sojourns into the past, medieval military surgery or the mystic healing customs of antiquity.

CHINA

(From Our Regular Correspondent)

Feb. 20, 1936.

The Biennial Conference of the Chinese Medical Association

The third biennial conference of the Chinese Medical Association, held in Canton, Nov. 1-8, 1935, was particularly noted for its celebration of the one hundredth anniversary of the Canton Hospital, where Dr. Peter Parker first introduced and taught Western medicine in China. This occasion also served as a celebration of the fiftieth anniversary of the beginning of Dr. Sun Yat-sen's medical and revolutionary work. The first event was further celebrated by the opening and dedication of the new Canton Hospital, which is the direct continuation of the work which Parker began a century ago. The latter event was likewise celebrated by laying the corner stone of the new Sun Yat-sen Medical School. This occasion was honored by the special visit from the United States of the grandson of Dr. Peter Parker. More than 400 physicians from all parts of China were present at the conference, including the extreme northwest, and 220 scientific papers were presented.

On the special centenary program a paper on "The Future of Medicine in China" was read by Dr. F. C. Yen, director of the National Medical College of Shanghai. He dealt vigorously with the proposal of the government to lower medical education standards in order to secure quickly a large number of doctors. "If more schools are started and staffed with unqualified teachers, it is bound to flood the profession with a large number of practitioners of quackery and commercialized medicine. In this way the standards of medical practice may not be upheld and it is doubtful whether in the end this will hasten the real progress of scientific medicine in China. The experience of other countries has shown that it is more difficult to fight against quackery and commercialized medicine when poorly trained doctors have once been admitted into the medical profession as recognized practitioners. Our government is determined to carry out a national medical program designed to provide medical care for all. . . . For this reason the national health administration has issued the following statement as its national policy: State medicine is the only policy to effect medical protection for the mass of the population in an efficient manner and the objective of community protection through state medicine necessitates an organized system of medical and public health services. For a unit of 5,000-10,000 of population there should be a rural health substation to take care of simple medical and health work, and for every five or ten such substations there should be a district health station to render more fundamental health and medical service to the people. In a county there should be a health center, which includes a hospital, a simple laboratory and an administrative organ for the supervision of medical and public health work under its jurisdiction. Similarly, a provincial health center should be built on a larger scale to supervise and assist the different county administrations. Above all these local organizations there should be a national health organization to organize and supervise the medical and health work throughout the country. Under such a system it would eventually be possible to bring health protection to every individual of the population in the most logical and effective manner. To carry out efficiently this national policy, all available medical and public health institutions and services should be fully utilized and guided along the lines of the general policy mentioned. It has been felt by those who are interested in social reconstruction work that during the past ten years too many individual efforts for the different classes of social reconstruction have been carried out without regard to coordination. In the medical field one cannot afford such lack of coordination. The declared policy of our government in favor of state medicine will undoubtedly hasten the time of government provision of medical care to the people. Then there will be an inevitable demand on medical schools for the training of personnel competent to practice state medicine, with the result that the medical school must adjust its curriculum and training methods so that they may be equal to the new responsibilities placed on them."

COUNCIL ON CONTRACEPTION

The conference passed the following resolution, proposed by Dr. Amos Wong: "That the Chinese medical profession recognize that contraception is a part of the activities of public health, especially in the field of maternity and child welfare." In pursuance of this resolution a special council was appointed to deal with the question of birth control in China. Since the closing of the conference the council has met, organized and laid down a program of procedure. In Shanghai a birth control league has been organized and Mrs. Margaret Sanger, pioneer in this field, is to visit Shanghai in March.

New National Medical College of Shanghai

The National Medical College of Shanghai is the first government school to undertake seriously the establishment of a school of what is known in the United States as grade A. Under the leadership of Dr. F. C. Yen, a graduate of Yale in 1909, this school was begun in a simple way in 1927. Dr. Yen is a direct descendant of China's greatest sage, Con-

fucius. He is of the seventy-fifth generation. Dr. Yen had some valuable experience in the Hunan-Yale school, where he developed qualities of leadership which have enabled him to direct his institution successfully to the establishment at present of what will soon be the greatest medical center in all China. To this undertaking the Rockefeller Foundation donated a tract of more than 20 acres of land in the French concession close to the old walled city of Shanghai. This valuable land and location have been held for a good many years for this purpose. When it came to construction activities the authorities controlling the French concession refused to permit the institution to be built on this site, supposedly because of the proximity of a small medical school under French control. This opposition caused a delay of more than a year in securing another suitable location.

Construction has now begun on a site that is fully under Chinese control and still convenient to the center of population. Nearly 20 acres in a city of four million population is a lot of land to devote to one institution. But this undertaking promises to be the greatest medical center in China and it will ultimately have more buildings than are now being constructed and is going to have to assume the health responsibility for a very large population. The present construction program consists of: 1. A dispensary building designed to take care of 500 patients daily. This is a three story building located at the corner of the approach. It is thus convenient to the public and directly connected to the hospital behind. 2. The hospital building of 500 beds. This is five stories high and has many attractive features both in construction and in arrangement. It is designed especially for teaching purposes and will accommodate all the services of the school. Adequate space is reserved for extending this building to accommodate a thousand beds. 3. A nurses' building to accommodate 150 pupil nurses and fifty graduate nurses with adequate facilities for demonstration, class, reading, social and dining rooms. 4. The medical school building, designed for the present accommodation of 300 students. There will be ten fully equipped laboratories for chemistry, physics, biology, anatomy, physiology, pathology, bacteriology, biochemistry, pharmacology and public health. Each of these will have its own offices, lecture halls, rooms for teaching, and research laboratories. Administration offices, the library and the museum will be included in this building. It consists of two wings of three stories and the central block of four stories. 5. A student dormitory for the accommodation of 300. All these buildings are to be of modern construction in the beautiful lines of Chinese architecture. The most striking feature will be the roof, with its gentle curves and green glazed tile. The walls will be of red brick. They will be ready for occupancy by fall.

While the National Medical College is a government institution, it has been put under the control of a self-perpetuating board of directors, the chairman of which is Dr. H. H. Kung, minister of finance in the Chinese government at Nanking. Dr. Kung is a direct descendant of Confucius in the seventy-second generation. He is a graduate of Oberlin College in Ohio and has been active in public affairs in China.

In addition to this hospital now under construction, the National Medical College has under its control or available for its teaching purposes the following institutions: 1. The Chong Chung Memorial Hospital for Tuberculosis, also known as the Kiangwan Tuberculosis Sanatorium. It has been reconstructed from a magnificent private garden donated by a wealthy Chinese merchant. It accommodates 120 patients. This is owned by the college itself. 2. The Hungjae Sanatorium. 3. The extensive public health work of the municipality of Greater Shanghai. This includes both city and suburban or country work, where modern rural work is now being directed. 4. The Shanghai Mercy Hospital, a new and model psychopathic institution, which was recently opened in Shanghai. 5. The National Leprosarium, just completed at Dahzang near Shanghai. This has been built as a model institution and is hoped to stimulate the improvement of leprosy institutions all over China. 6. The Chinese Infectious Disease Hospital.

Narcotic Control by the Government

The Chinese government has formed new regulations for the importation of the following ten narcotics: opium, morphine hydrochloride, codeine, ethylmorphine hydrochloride, apomorphine hydrochloride, cocaine hydrochloride, strychnine hydrochloride, pantopium hydrochloricum, fluidextract of cannabis indica, and acetone codeine. The regulations make it impossible for any of these drugs to be imported except by the government itself, which will in turn distribute them to hospitals and practitioners through one organization, the Central Hygienic Laboratory. This move is only one of the firm and vigorous attempts on the part of the government to control opium and other habit forming drugs. Government officials are requiring payment in advance and selling only to qualified registered physicians.

New Sources of Vitamin A and Their Uses

Dr. Peter G. Mar read a paper January 22 before the Henry Lester Institute of Medical Research in Shanghai. He reviewed the present general knowledge of vitamin A and pointed out that night blindness is a well defined condition described in old Chinese medicine and indicates that it has a nutritional basis. Since vitamin A speedily cures this condition he undertook an investigation of old Chinese remedies recommended, with interesting results regarding their vitamin A content and carotenoid values. Some of the 146 remedies so studied had low values, while feces of the flying fox, bat and sparrow, which are still much used in China, yielded very high results. In this list were twenty-two inorganic remedies, which yielded various results. Sixty-five vegetable substances were examined, twenty of which were found to have a higher value, eight an equal value, and thirty-seven a lower value than cod liver oil. Atractylis gave values about eighteen times that of cod liver oil. Coltsfoot, broom, pink, yam and ink plant all had high values. He discussed further the use of these remedies in connection with vesical calculus, leprosy and generally recognized vitamin A deficiency diseases. It is possible that in the old Chinese medicine these remedies gained their favor because of their vitamin A and provitamin A potency.

Marriages

JAMES T. BLAKELY to Mrs. Helen Vernon Fawley, both of Fairfield, Ill., in Paducah, Ky., January 19.

JOSEPH EVANS BRUNSON, Taylors, S. C., to Miss Betty Cauble Gibson of Greenville, February 9.

WALTER AUSTIN BACON, Pottsville, Pa., to Miss Elizabeth Flock of Williamsport, February 8.

OTIS R. PLATT, North Platte, Neb., to Miss Mary K. McHugh of Murdock, recently.

CHARLES M. MCGILL, Seattle, to Miss Edith Hanson of Forest Grove. Ore., recently.

WILLIAM M. COVODE, Chicago, to Miss Eleanor Lindquist of Webster, Wis., February 20.

JACOB N. BAILEY to Miss Thelma Elizabeth Drinnon, both of Paducah, Ky., February 6.

ANTHONY P. DESTI, Brooklyn, to Miss Frances Licata of Tampa, Fla., January 4.

HAROLD M. BLOCK, Dallas, Texas, to Miss Jane Landau of New York, January 3.

HERBERT M. COLEMAN to Miss Grace Perdue, both of Iaeger, W. Va., January 26.

Deaths

Malcolm LaSalle Harris ✠ President of the American Medical Association 1928-1929, died at the Milwaukee Sanitarium, Wauwatosa, March 22, after an illness of more than a year. Dr. Harris was born June 27, 1862, in Rock Island County, Ill., the son of Samuel G. and Frances Green Harris. His early education was received in the public schools of Iowa and his medical education at Rush Medical College, from which he received the degree of doctor of medicine in 1882. Since he was only 20 years of age at the time, he was required to wait one year before taking the examination for licensure. He practiced medicine continuously in Chicago after his graduation, teaching also in the Cook County Hospital and serving as professor of surgery in the Chicago Policlinic. Following reorganization of the American Medical Association in 1901, Dr. Harris became a member of the House of Delegates and was in attendance at all sessions either as a member of the House, of the Board of Trustees or of the Judicial Council from 1901 through 1934. He was a member of the Board of Trustees from 1903 to 1918, most of the time acting as secretary of the Board. He was a member of the Judicial Council from 1918 through 1928, serving also as its chairman. He had been president of the Chicago Medical, Chicago Surgical and Chicago Pathological societies and also of the Western Surgical Association. He was also a member of the International Surgical Association, the American Surgical Association and the American Association for Clinical Surgery. In the Section on Surgery of the American Medical Association he was secretary in 1898 and 1899. His contributions to medical literature included not only the translation and editing of Braun's "Local Anesthesia" but also contributions to the Oxford, Keen's and Bryant's Systems of Surgery. More recently he had written significant essays in the fields of medical economics and statesmanship. He served continuously as secretary of the board of trustees of Henrotin Hospital from 1889 until retired as president emeritus in 1935. The passing of Dr. Harris is mourned by a wide circle of distinguished political, industrial and medical leaders. He was a clear and profound thinker, shrewd in his estimation of men and of their motives, and characterized as the possessor of a mind both scientific and legal. Diffident and cautious in his intimacies, his friendship was greatly esteemed and highly appreciated by all who knew him well.

MALCOLM LASALLE HARRIS, M.D., 1862-1936

Allard Memminger, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1880; member of the South Carolina Medical Association; formerly dean and professor of chemistry and hygiene and clinical urinary diagnosis at his alma mater, and professor of general and applied chemistry at the College of Pharmacy of South Carolina; at one time member of the State Board of Pharmacy Examiners of South Carolina and chairman of the city board of health; a contributor to medical and literary magazines; aged 81; died, January 16, of influenza and bronchopneumonia.

Harris Ellett Santee ✠ Chicago; University of Pennsylvania Department of Medicine, Philadelphia, 1892; member of the American Association of Anatomists; professor of anatomy, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900-1910; professor of nervous anatomy, Chicago College of Medicine and Surgery, 1910-1917; author of "Anatomy of Brain and Spinal Cord"; aged 71; died, February 28, in the West Side Hospital, of chronic bronchitis and myocarditis.

Hugh Prescott Ross, Nampa, Idaho; Trinity Medical College, Toronto, Ont., Canada, 1900; member and past president of the Idaho State Medical Association; past president and secretary of the Canyon County Medical Society; at one time member of the state legislature; member of the state board of medical examiners; on the staff of the Mercy Hospital; aged 60; died, January 17, of pneumonia.

William S. Tomlin ✠ Indianapolis; University of Louisville (Ky.) Medical Department, 1892; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staffs of St. Vincent's, Methodist Episcopal, St. Francis, and Indianapolis City hospitals; aged 67; died, January 27, of cardiovascular renal disease.

Herrman Hirsch Harris ✠ Jacksonville, Fla.; Tulane University of Louisiana Medical Department, New Orleans, 1910; past president of the Duval County Medical Society; served during the World War; aged 52; on the staffs of the Duval County Hospital, St. Luke's Hospital and St. Vincent's Hospital, where he died, January 20, of coronary thrombosis and arteriosclerosis.

Ira Leckrone, Silver Lake, Ind.; Rush Medical College, Chicago, 1896; member of the Indiana State Medical Association; elected president of the Kosciusko County Medical Society at the December meeting; aged 66; died, January 15, in the Woodlawn Hospital, Rochester, of injuries received when the automobile in which he was driving was struck by a train.

Charles Mills Gleason ✠ Manitowoc, Wis.; Rush Medical College, Chicago, 1901; past president of the Manitowoc County Medical Society, and councilor of the fifth district of the State Medical Society of Wisconsin; aged 66; on the staff of the Holy Family Hospital, where he died, January 19, of coronary embolism.

John Harris Vance, Omaha; Jefferson Medical College of Philadelphia, 1886; past president of the Omaha-Douglas County Medical Society; at one time member of the school board; formerly on the staff of the Wise Memorial Hospital; aged 77; died, January 16, in the Immanuel Hospital, of pneumonia.

Linwood Melrose Keene, Crownpoint, N. M.; Medical School of Maine, Portland, 1904; served during the World War; on the staff of the Eastern Navajo Agency Hospital; aged 61; died, January 14, in the Veterans Administration Facility, Albuquerque, of streptococcic sore throat.

Omer Davis Hutto ✠ Kokomo, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; past president of the Howard County Medical Society; on the staff of the Good Samaritan Hospital; aged 56; died, January 26, of coronary occlusion.

James A. Rosoff ✠ Compton, Calif.; Northwestern University Medical School, Chicago, 1924; instructor in medicine, University of Southern California Medical School, Los Angeles, since 1934; on the staff of the Los Angeles County Hospital; aged 36; died, January 24, in the Hospital of the Good Samaritan, Los Angeles, of uremia.

Francis S. Feeney ✠ New Hampton, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; formerly county coroner; on the staff of St. Joseph's Hospital; aged 61; died, January 18, of coronary occlusion.

James Alexander Irwin, Philadelphia; Jefferson Medical College of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; for many years on the staff of the Jefferson Hospital; aged 84; died, January 6, of carcinoma of the prostate.

Alexander Irvine, McDowell, W. Va.; Medical College of Virginia, Richmond, 1887; formerly superintendent of the Welch (W. Va.) Hospital number 1, now known as the Welch Emergency Hospital; aged 73; died suddenly, January 14, of angina pectoris.

Gustave Adolphus Wedemeyer ✠ Taylor, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1899; past president of the Williamson County Medical Society; aged 61; died, January 24, in Temple, of mastoiditis and diabetes mellitus.

Harry Eastman Hitchcock, Woodbridge, Conn.; Medical School of Maine, Portland, 1898; served in the U. S. Public Health Service during the World War; formerly district health officer for the west coast of Florida; aged 63; died, January 6.

George Oscar Hulick ✠ East St. Louis, Ill.; American Medical College, St. Louis, 1902; formerly professor of obstetrics at his alma mater; past president of St. Clair County Medical Society; aged 59; died, February 3, of myocarditis.

William Nassau Kendrick, Spring Valley, Minn.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1896; member of the Minnesota State Medical Association; aged 63; died, January 21, in Rochester of agranulocytic angina.

William James Hawkins, San Francisco; University of California Medical Department, San Francisco, 1890; fellow of the American College of Surgeons; for many years on the staff of the French Hospital; aged 66; died, January 7.

John G. Kinneman ✠ Goodland, Ind.; Medical College of Indiana, Indianapolis, 1898; formerly secretary of the Jasper-Newton Counties Medical Society; aged 67; died, January 23, of coronary occlusion and valvular heart disease.

Winston Garfield Ramey, Protection, Kan.; University of Louisville (Ky.) Medical Department, 1907; member of the Kansas Medical Society; served during the World War; aged 54; died, January 6, of meningioma of the brain.

William Alexander Gowan, Kosciusko, Miss.; College of Physicians and Surgeons, Memphis, Tenn., 1909; member of the Mississippi State Medical Association; aged 56; died, January 14, in a hospital at Jackson, of pneumonia.

Charles Kline Ferer ✠ Meadville, Pa.; Medico-Chirurgical College of Philadelphia, 1904; served during the World War; on the courtesy staff of the Meadville City Hospital; aged 55; died, January 15, of coronary occlusion.

William B. Richardson ✠ Parkersburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1914; served during the World War; on the staff of St. Joseph's Hospital; aged 45; died, January 1, of coronary occlusion.

George Hatch Beebe, Pittsfield, Mass.; Albany (N. Y.) Medical College, 1894; aged 68; for many years on the staff of St. Luke's Hospital, where he died, January 15, of cerebral hemorrhage and bronchopneumonia.

Edward Donald Sorteberg, Cannon Falls, Minn.; University of Minnesota Medical School, Minneapolis, 1932; aged 28; died, January 17, in the Fitzsimons General Hospital, Denver, of pulmonary tuberculosis.

Knud Hanson ✠ Grand Junction, Colo.; Denver College of Medicine, 1898; fellow of the American College of Surgeons; attending surgeon to St. Mary's Hospital; aged 61; died, Dec. 25, 1935, of bronchopneumonia.

James M. Nealon ✠ Plymouth, Pa.; College of Physicians and Surgeons, Baltimore, 1902; aged 59; on the staff of the Mercy Hospital, Wilkes-Barre, where he died, January 9, of diverticulitis and peritonitis.

John William Clark, Oak Hill, Ohio; Ohio Medical University, Columbus, 1893; served during the World War; formerly county health officer; aged 68; died, January 3, of ventricular fibrillation.

Jessie Drew Carpenter, Manitowoc, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; aged 72; died, January 20, of aortic regurgitation.

Thomas Leo Brennan, New York; University and Bellevue Hospital Medical College, New York, 1926; at various times resident in the tuberculosis service at Bellevue Hospital; aged 38; died, January 8.

Charles Andrew Trumbauer, Denver; Keokuk (Iowa) Medical College, 1897; member of the Colorado State Medical Society; aged 65; died, February 4, in the Presbyterian Hospital, of uremia.

Charles Wickham Parker, Chicago; Eclectic Medical College of the City of New York, 1882; Rush Medical College, Chicago, 1893; aged 81; died, Dec. 30, 1935, of carcinoma of the rectum.

Henry T. Dickens, Wilsonville, Ala.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1889; member of the Medical Association of the State of Alabama; aged 71; died, January 8.

John Woodbridge Bosworth, Philippi, W. Va. (licensed in West Virginia in 1881); member of the West Virginia State Medical Association; Civil War veteran; aged 97; died, January 4.

Seth Jones Montague, Durham, N. C.; Bellevue Hospital Medical College, New York, 1872; aged 85; died, January 28, in the Watts Hospital, Durham, of carcinoma of the pancreas.

Alburn Matthias Stafford, San Diego, Calif.; University of the City of New York Medical Department, 1888; aged 70; died, January 19, of cerebral hemorrhage and angina pectoris.

Henry W. Drury, Mineral Wells, Texas (registered by Texas State Board of Medical Examiners, under the Act of 1907); aged 67; died, Dec. 5, 1935, of cerebral hemorrhage.

Hardy David Havard, Theodore, Ala.; University of Alabama School of Medicine, 1911; served during the World War; aged 46; died, January 15, of carcinoma of the esophagus.

William Arthur Method, Columbus, Ohio; Ohio Medical University, Columbus, 1906; member of the Ohio State Medical Association; aged 55; died, January 16, of pneumonia.

Charles North Mason, Newport, N. C.; College of Physicians and Surgeons, Baltimore, 1882; aged 81; died, January 18, of cerebral hemorrhage and diabetes mellitus.

Stephen Kerr Patten, Boston; Harvard University Medical School, Boston, 1897; aged 65; died, January 11, in the Peter Bent Brigham Hospital, of cerebral hemorrhage.

A. Pierce Kemp, Macon, Ga.; Southern Medical College, Atlanta, 1889; member of the Medical Association of Georgia; aged 67; died, January 13, of lobar pneumonia.

Samuel H. Slote, Brooklyn; Baltimore Medical College, 1893; member of the Medical and Chirurgical Faculty of Maryland; aged 75; died, January 16, of pneumonia.

William Frederick Woller, Oakland, Calif.; College of Physicians and Surgeons of San Francisco, 1914; aged 50; died, January 9, of endocarditis and nephritis.

Daniel James Hoyt, New York; University of Vermont College of Medicine, Burlington, 1902; aged 63; died, January 8, of coronary thrombosis and arteriosclerosis.

Robert Cleveland Williams, Wallace, N. C.; University of Maryland School of Medicine, Baltimore, 1912; aged 49; died, January 27, of coronary thrombosis.

David Nathaniel Dabbs, Rocky Comfort, Mo.; University of Tennessee Medical Department, Nashville, 1890; aged 74; died, January 18, of cerebral hemorrhage.

Millard F. Powell, Little Rock, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1892; aged 75; died, January 10, in Pensacola, Fla.

Joseph A. Tate, Ennis, Texas; University of Tennessee Medical Department, Nashville, 1888; aged 73; died, January 14, of pneumonia and heart disease.

Jacob Wendell Clark ✠ Chicago; Rush Medical College, Chicago, 1899; served during the World War; aged 57; died, January 30, of coronary thrombosis.

Charles Theodore Doremus, San Antonio, Texas; Memphis (Tenn.) Hospital Medical College, 1891; aged 74; died, January 14, of chronic myocarditis.

Gilbert Milton Bargar, Blaine, Ohio; Starling Medical College, Columbus, 1892; aged 65; died, January 4, of hemiplegia and cardiovascular disease.

Franklin Bache Van Nuys, Jackson, Mich.; Medical College of Indiana, Indianapolis, 1889; aged 70; died, January 18, of cerebral hemorrhage.

Augustus C. Boyles, Mount Airy, N. C.; Baltimore University School of Medicine, 1897; aged 68; died, January 28, of myocarditis.

Claude Owen Reist, Preston, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1919; aged 40; died, January 29.

John D. Leeson, Aylmer (West), Ont., Canada; University of Toronto Faculty of Medicine, 1903; aged 60; died, January 29,

John Alexander Lawson, Brampton, Ont., Canada; University of Toronto Faculty of Medicine, 1894; died, January 17.

George W. Tucker, Franklin, Ind. (licensed in Indiana in 1897); aged 91; died, January 26, of arteriosclerosis.

Arthur De Voe, Seattle; University of Buffalo School of Medicine, 1875; aged 85; died, Dec. 29, 1935.

Eli Taylor, Nezperce, Idaho; Louisville (Ky.) Medical College, 1895; aged 83; died, Dec. 15, 1935.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Ammon's Gall Stone Remedy and Ammon's Oil Gall Stone Remedy.—Home Remedy Co., Pittsburgh. Composition: Gall Stone Remedy: Essentially plant drug extracts including podophyllum, alcohol (8.6 per cent by volume) and water; small envelope of epsom salt accompanied it. Oil Gall Stone Remedy: Essentially an oil having the odor of olive oil, and plant drug extracts including podophyllum. Fraudulent therapeutic claims.—[*N. J. 23235; May, 1935.*]

Ammon's Get Well, Eat Well, Stay Young.—Home Remedy Co., Pittsburgh. Composition: Essentially plant drug extracts, alcohol (about 9 per cent) and water. Cure-all. Misbranded because alcohol content was wrongly stated and because of fraudulent therapeutic claims.—[*N. J. 23235; May, 1935.*]

Chlorine Respirine.—Chlorine Respirine Co., Chicago and Indianapolis. Composition: Essentially a calcium compound, chlorides and a trace of chlorine, in petrolatum. For bronchitis, laryngitis, influenza, etc. Fraudulent therapeutic claims.—[*N. J. 23025; April, 1935.*]

Hill's Nose Drops.—Wyeth Chemical Co., Detroit. Composition: Essentially ephedrine (0.5 per cent) and essential oils including peppermint and wintergreen (5 per cent), incorporated in mineral oil. For catarrh, hoarseness, rhinitis, etc. Fraudulent therapeutic claims.—[*N. J. 23248; May, 1935.*]

Adgene.—Adgene, Inc., Paterson, N. J. Composition: Essentially barley malt, sugar, cocoa, and calcium and phosphorus compounds. For underweight, run-down conditions, etc. Fraudulent therapeutic claims.—[*N. J. 23254; May. 1935.*]

Trunk's Prescription.—Trunk Bros. Drug Co., Denver. Composition: Essentially potassium iodide, extracts of plant drugs including colchicum, and a laxative, with alcohol and water. For rheumatism, skin and blood disorders, etc. Fraudulent therapeutic claims.—[*N. J. 23255; May, 1935.*]

Chesto.—Muir Laboratories, Grand Rapids, Mich. Composition: Chiefly petrolatum and small amounts of volatile oils including eucalyptol, menthol, oil of pine and camphor. For coughs, asthma, catarrh, hay fever, boils, piles, etc. Fraudulent therapeutic claims.—[*N. J. 23257; May, 1935.*]

Lightning-Lax Pills.—Muir Laboratories, Grand Rapids, Mich. Composition: Essentially plant drugs including a laxative. For biliousness, pimples, debility, bad blood, etc. Fraudulent therapeutic claims.—[*N. J. 23257; May, 1935.*]

Vegetrate.—Health Foundation of California, Los Angeles. Composition: Essentially calcium carbonate and powdered plant material including rice, kelp, alfalfa and senna, in tablet form. For hyperacidity, bloating, constipation, etc. Fraudulent therapeutic claims.—[*N. J. 23260; May, 1935*]

Fullerine.—Fuller-Hill Corp., Chicago. Composition: Essentially alcohol (27 per cent), boric acid (1.6 per cent) and small amounts of benzoic acid and volatile oils including thymol and menthol. For dandruff, sore throat, aching feet, etc. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 23261; May, 1935.*]

Lambert's Rheumatic Powders.—Lambert Chemical Corp., Minneapolis. Composition: Essentially acetanilid (2.3 grains per tablet), aspirin and salol. Misbranded because of false statement on label that it contained nothing injurious, and because of fraudulent therapeutic claims.—[*N. J. 23262; May, 1935.*]

Wonderful Dream Salve.—Wonderful Dream Salve Co., Detroit. Composition: Essentially creosote in an ointment base. For abscesses, boils, carbuncles, sore eyes, corns, etc. Fraudulent therapeutic claims.—[*N. J. 23263; May, 1935.*]

W. D. S. Pills.—Wonderful Dream Salve Co., Detroit. Composition: Essentially plant material including aloe. For blood and liver disorders, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 23263; May, 1935.*]

Arko Eczema Salve.—Arko Herbs, Inc. Composition: Essentially zinc oxide (11.2 per cent) and tar, in a petrolatum base. Fraudulent therapeutic claims.—[*N. J. 23272; May, 1935.*]

Booth's Hyomei.—Booth's Hyomei Co., Ithaca, N. Y. Composition: Volatile oils (32 per cent) including eucalyptol and menthol, with creosote, alcohol and water. For catarrh, croup, laryngitis, etc. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 23266; May, 1935.*]

Kremola Skin Bleach.—Kremola Co.-Dr. C. H. Berry Co., Chicago. Composition: Essentially ammoniated mercury (6.35 per cent) and zinc stearate (13.5 per cent), in petrolatum, perfumed. For eczema, pimples, acne, etc. Fraudulent therapeutic claims.—[*N. J. 23268; May, 1935.*]

Stoll's Diet-Aid.—Diet-Aid Sales Co., Chicago. Composition: Essentially corn starch, sugar, cacao powder and caramel. For obesity (food substitute). Fraudulent therapeutic claims.—[*N. J. 23271; May, 1935.*]

Diana Sosborszesz.—Diana Mfg. Co., Masontown and Uniontown, Pa. Composition: (Large bottle) Essentially alcohol (39.7 per cent), acetone, ethyl acetate, volatile oils including peppermint oil (7.8 per cent), boric acid, zinc phenolsulphonate and water; (small bottle) essentially alcohol (48.8 per cent), acetone, ethyl acetate, volatile oils including peppermint oil (1.2 per cent), acetic acid, common salt and water. For rheumatism, lumbago, gout, etc. Fraudulent therapeutic claims.—[*N. J. 23269; May, 1935.*]

Correspondence

GLYCOSURIA FROM TREATMENT WITH ANTERIOR PITUITARY-LIKE HORMONE FOR IMPERFECTLY DEVELOPED TESTIS

To the Editor:—In a recent article by Dr. Harry Koplin on glycosuria caused by administration of antuitrin-S for bilateral undescended testes (THE JOURNAL, February 1, p. 374) it was stated by the author that after injections of antuitrin-S (twenty-four 1 cc. injections in eight weeks) for undescended testes in a child, aged 30 months, polydipsia, polyuria, enuresis and glycosuria were produced. Three weeks after the cessation of treatment with antuitrin-S, these symptoms and the glycosuria disappeared.

The occurrence of the aforementioned symptoms stimulated a more careful review and recheck of a number of patients in my series who were treated or are being treated for maldeveloped or maldescended testes with the gonadotropic hormone of the urine of pregnant women (Follutein-Squibb).

In none of the cases previously reported by me in the literature (Maldevelopment and Maldescent of the Testes, *Am. J. Dis. Child.* **50**:649 [Sept.], 1429 [Dec.] 1935) or in those not reported (sixty patients in all, the majority ranging in age from 3⅓ to 15 years, the rest being adults or in late adolescence) was there any suspicion of glycosuria, as might have been evidenced by the symptoms of polydipsia, polyuria or enuresis.

This suspicion was lacking because of this absence, in all patients, of the subjective complaints in question and because of the definite absence of dextrose in the urine specimens of those several patients who were studied. Not all of these cases, therefore, were subjected to intensive urine studies before this time. Nevertheless, after Koplin's report I instituted a check up.

Anteprandial and postprandial urine specimens of one group of sixteen patients, ranging in age from 5½ years to 14 years with one patient 19 years of age, who are at present showing good genital response to the anterior pituitary-like gonadotropic principle from the urine of pregnant women (with the exception of 2 patients—the 19 year old boy, and a 6 year old boy who has received an insufficient amount of the anterior pituitary-like principle derived from an extract of the placenta), were taken and examined a number of times for each patient. These were tested for dextrose by the Benedict qualitative method. The urines of these sixteen patients (even in the one in whom a different brand of gonadotropic principle was used) showed an absence of dextrose.

In addition to this study of the urine of the patients still under treatment, I examined several specimens of urine from eight boys who had received and completed a course of treatment with this hormone and who had therefore already been

discharged after showing a satisfactory genital response. This group was all under 14 years of age. The lapse of time between the last injection of this hormone and the institution of this urine study ranged from four to twenty months. There was no evidence of glycosuria in any of the patients of this group.

I feel, therefore, that the glycosuria in the patient observed by Koplin might have been a coincidental finding or one peculiar to this patient, for it can be stated with certainty that neither my patients who are at present receiving treatment or the eight patients of the group who had received and completed treatment with gonadotropic substance of the urine of pregnant women for their imperfectly developed testes showed polydipsia, polyuria, enuresis or glycosuria.

It must not be overlooked that the commercial preparation used by Koplin differed from the one that I used. However, I have had the occasion to check on the product antuitrin-S used by Koplin, in three of my patients who have received by now, large quantities of this hormone. I have found no glycosuria present.

GEORGE B. DORFF, M.D., Brooklyn.

1176 Eastern Parkway.

From the Endocrine Clinics of the Department of Pediatrics, New York University Medical College, the Children's Medical Service of the Third Medical Division, Bellevue Hospital, and the Beth-El Hospital.

SENSITIZATION OF GUINEA-PIGS WITH METHYL HEPTINE CARBONATE

To the Editor: — Prompted by a recent editorial comment (Lip Stick Dermatitis, THE JOURNAL, February 8, p. 470) we report briefly experiments which have shown that sensitization of animals with methyl heptine carbonate can be effected by methods used in previous work on dinitrochlorobenzene and other substances (Landsteiner, Karl, and Jacobs, John: Studies on the Sensitization of Animals with Simple Chemical Compounds, *J. Exper. Med.* **61**:643 [May] 1935). The investigation was made on account of observations in human beings on dermatitis due to facial cream or lip stick containing methyl heptine carbonate and "perfume dermatitis" described in papers first brought to our attention by Dr. Simon Flexner (Hoffman, M. J., and Peters, John: Dermatitis, Due to Facial Cream, Caused by Methyl Heptine Carbonate, THE JOURNAL, March 30, 1935, p. 1072. Baer, H. L.: Perfume Dermatitis, *ibid.*, May 25, 1935, p. 1926).

Ten intracutaneous injections at weekly intervals in white guinea-pigs, on the back, of 0.05 cc. of olive oil containing 0.5 mg. of methyl heptine carbonate were followed by two weeks of rest and the animals tested by gently spreading one drop of a 20 per cent alcoholic solution of the substance on the skin of the flank. While normal animals, as a rule, do not show any reactions, in a considerable number of the sensitized pigs the treated sites became pink, sometimes elevated, and the sensitization was specific as demonstrated in cross tests with animals sensitized with 2:4 dinitrobenzyl chloride, *o*-chlorobenzyl chloride, 2:4 dinitrochlorobenzene, urushiol, and *p*-nitrobenzyl chloride.

In several animals, sensitization could be produced by applying methyl heptine carbonate to the surface of the skin.

In keeping with the suggestion mentioned in our report, one may suppose that in this case also the capacity of methyl heptine carbonate $CH_3.(CH_2)_4C{=}CO_2.CH_3$ to sensitize is due to its chemical reactivity, particularly the ability to combine with basic groups (Moreu and Lazennec: *Compt. rend. Acad. d. sc.* **143**:596, 1906), so that it would seem probable that the substance may be converted into antigenic compounds in the animal body.

KARL LANDSTEINER, M.D.
JOHN JACOBS, M.D.

Rockefeller Institute for Medical Research, New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SPUTUM EXAMINATION IN TUBERCULOSIS

To the Editor:—I should like some information about sputum examination in tuberculosis or in suspected cases, especially in children. One man's opinion is that sputum examination is no good for early cases, since by the time bacilli can be found in the sputum the disease is well advanced and other signs are numerous. Another opinion is that the bacilli are found in early cases in the sputum before any other signs are demonstrable. What is the latest thought on this question? What is the best way to collect a specimen? Is the sputum of an extremity of the day better?

ARTHUR B. DAVENPORT, M.D., Tunkhannock, Pa.

ANSWER.—Examination of the sputum should be made in all cases of tuberculosis or even of persons suspected of having the disease. Frequently the patient states that he does not have any sputum. In such cases it is worth while to collect for examination the material that he believes is only cleared from his throat. In the case of infants and children one is usually dealing with the primary form of tuberculosis and there is usually no sputum expectorated. However, when the disease is in the acute pneumonic stage and occasionally even after calcium has been deposited, tubercle bacilli may be recovered from the gastric contents or the feces. Since the infant does not expectorate, a common method of attempting to obtain sputum is by the use of a cotton swab to collect the sputum from the throat while the infant gags. However, this method is not always satisfactory.

The most accurate method of demonstrating tubercle bacilli in the bodies of infants is as follows: After the infant has been without food for six hours, from 200 to 300 cc. of sterile water is used to wash the stomach. This water is then centrifugated and the sediment stained for tubercle bacilli. If the micro-organisms are not found, some of the sediment is planted on one of the mediums such as that of Corper, Sweany or Petroff, and some is inoculated into the bodies of guinea-pigs. By culture and inoculation methods, demonstration of tubercle bacilli is often possible when the microscopic examination of the sediment alone fails to reveal them. Such workers as Poulsen, Jensen and Husted (*Am. J. Dis. Child.* **37**:900 [May] 1929), Willis (*Tr. Nat. Tuberc. A.*, 1933, p. 135) and Gourley (*Am. Rev. Tuberc.* **29**:461 [April] 1934) have made rather extensive studies on this subject.

Apparently, the tubercle bacilli that are eliminated from primary lesions in infants and children do not constitute a serious public health menace, because they are eliminated by way of the intestinal tract. The occasional infant or child develops the reinfection type of pulmonary tuberculosis, which may appear as tuberculous pneumonia or as a chronic disease. In such cases there usually is considerable coughing, and tubercle bacilli may be recovered from the sputum. These cases are just as significant from the standpoint of spread of tubercle bacilli to others as open cases of tuberculosis in adults.

In the reinfection type of chronic pulmonary tuberculosis the lesion usually is present a long time before there are any symptoms, such as coughing and expectoration. Such lesions usually begin in a very small way and may be present over a considerable period of time before they will cast shadows that can be seen with the naked eye even on stereoscopic x-ray film examination. Even after they become sufficiently large to cast shadows that are easily visualized on x-ray films, there usually is no symptom and therefore no sputum to examine over many months and in some cases over several years. Therefore tuberculosis may exist in a progressive form without any demonstrable tubercle bacilli in the sputum. In the days of Koch and Trudeau, the finding of tubercle bacilli in the sputum of a person who was not seriously ill was sometimes the first definite manifestation of tuberculosis; that is, physical signs were absent, as well as significant symptoms. However, since that time our diagnostic aids have improved to such an extent that the disease can usually be diagnosed long before the sputum is positive.

It is true that, in the occasional case, tubercle bacilli may be found in the sputum even in the absence of clinical symptoms, physical signs, or demonstrable shadows on the x-ray film. Probably in such cases the bacilli are liberated from caseous lymph nodes that have ruptured into a bronchus or one of its ramifications and continues to feed tubercle bacilli into the bronchial tree. While such cases apparently are rare, nevertheless they emphasize the importance of making complete examinations of the sputum for tubercle bacilli in every person who has a cough and expectoration.

A satisfactory way to collect a specimen of sputum is to have the patient expectorate into a container in which has been previously placed a few cubic centimeters of a 5 per cent solution of phenol. This suffices to kill any bacilli that may be present and yet does not destroy their staining qualities. Thus, the sputum is rendered harmless to those who subsequently work with it. When tubercle bacilli are not found in direct smears from specimens collected in this manner, one should then collect in a sterile empty container all the sputum for twenty-four hours or longer. In this the bacilli remain alive and the specimen may be treated by the various methods preparatory to guinea-pig inoculation, implantation on culture mediums, and so on. When only direct smear examinations are to be made, it is usually thought best to collect the first sputum expectorated on awakening in the morning.

If one depends on the staining of direct smears of sputum even when tubercle bacilli are present, they are often entirely overlooked. This is not difficult to understand when one considers the small amount of sputum examined under the microscope. Therefore, a single negative finding is of no value. Corper (The Certified Diagnosis of Tuberculosis, THE JOURNAL, Aug. 11, 1928, p. 371) has shown that in order to find tubercle bacilli by microscopic examination of stained smears there must be approximately 100,000 tubercle bacilli in a single cubic centimeter of sputum. Special methods of examination have been devised, such as the antiformin method, which consists of collecting the sputum for two or three days, then adding to the total amount 15 per cent by volume of antiformin (a preparation consisting of a mixture of sodium hydroxide and sodium hypochlorite and obtainable from commercial houses). This reduces the consistency of the sputum to fluid, which should be thinned with alcohol or water and centrifugated. The sediment collected is washed in water, centrifugated again, and from this smears are made, which are stained in the usual way. Not infrequently bacilli are demonstrated in this manner when it is impossible to find them by the direct smear method. The dilution-flotation method described by Pottenger (*Am. Rev. Tuberc.* **24**:583 [Nov.] 1931) has been found to be a very accurate, quick method for detecting tubercle bacilli when only a few are present in the sputum.

Guinea-pig inoculation has become a standard method in diagnosis. It consists of introducing approximately 0.5 cc. of sputum subcutaneously into the inguinal region of the animal. From about fourteen to twenty-one days later the intracutaneous tuberculin test is administered. If the test has become positive in animals that were previously negative to the test, it is good evidence that the sputum introduced contained tubercle bacilli. Confirmatory evidence may be obtained by postmortem examination of the animal after four or five weeks.

Culture mediums have been extensively used because they are accurate, simple and inexpensive. As sputum frequently contains many other micro-organisms, one can destroy them for the most part by treating it with 4 per cent antiformin. After an hour the material is centrifugated, and the sediment is planted on laboratory mediums. Antiformin may be dispensed with if Petroff's medium, which contains gentian violet, is used. This inhibits the growth of micro-organisms other than tubercle bacilli and, therefore, permits one to plant sputum directly on it.

EFFECTS OF COLD APPLICATIONS ON HEAD INJURIES

To the Editor:—Relative to the use of ice, irrespective of the method employed, in head injuries, will you kindly inform me on the following points: 1. To what approximate depth (ice throughly applied) does the effect of this therapy penetrate? 2. Are the beneficial results to deeper brain substance obtained by continuous blood flow from periphery to center? 3. Knowing that ice applied as stated violently constricts the superficial capillaries and other blood vessels near the surface, is there a possibility of producing further engorgement of the deeper structures and in this manner defeat, at least in part, the results intended? 4. Is atropine indicated to promote marked and general capillary dilatation, thereby relieving deeper engorgements? Cannot the skin take care of a great volume of blood for an indefinite period without damage resulting?

W. T. ARNOLD, M.D., Hemphill, Texas.

ANSWER.—1. Ice applied to the skin and body does not cause cold to penetate to any great depth. It is diffused by the blood supply. The literature on the question of penetration of cold is varied:

Leyton and Sherrington (*Quart. J. Exper. Physiol.* **11**:214, 1917) demonstrated that an ice bag applied to the skull might change the intradural temperature through a range of 5 to 6 degrees centigrade.

Bernhard Zondek (*München. med. Wchnschr.* **57**:810 [July 9] 1920) showed that an ice bag applied one hour over the human thigh lowered the skin temperature from 34.8 to 7 C. and the deep muscle temperature (5 cm. deep) from 37.1 to 36.3 C. He also introduced his thermometer into the psoas muscle just posterior to the peritoneum. An ice bag over the hypogastrium for two hours produced a drop of 4.5 degrees centigrade.

Selling Brill (*Ann. Surg.* **89**:857 [June] 1929) reported observations on effects of an ice bag on the abdomen of a dog and showed that it had little effect on the intraperitoneal temperature, the greatest fall being 2.5 degrees centigrade, which was observed in one instance.

2. Yes.

3. The capillaries may be violently contracted by the application of ice. This, however, is counteracted by the increased blood flow to counteract the effect of the ice. Lewis (*Brit. M. J.* **2**:61 [July 10] 1926) showed that on the application of cold the number of skin capillaries remaining open and active usually decreases and that the rate of flow usually slows. If the part is suddenly dipped in ice water the effect in many cases may be the activation of many more capillaries with a markedly increased rate of flow. This is apparently an attempted compensatory reaction.

4. It is questionable whether there would be deeper engorgement. It is doubtful that atropine would have any effect on it.

LATENT SYPHILIS

To the Editor:—A patient 62 years of age contracted syphilis innocently six years ago. The diagnosis was not made until January 1935, when the only symptom was a dry hacking cough and the blood test found to be four plus (Kahn). Treatment has consisted of thirty-two intravenous injections of neoarsphenamine, 0.6 Gm., alternated biweekly with thirty-two intramuscular injections of sodium bismuth thioglycollate, 0.2 Gm., representing 76 mg. of metallic bismuth, and potassium iodide, 15 grains (1 Gm.) orally daily. When half of this continuous treatment had been completed and the serologic reaction was still positive, it was thought wise to give the injections in individual courses instead of in alternating doses and so six injections at weekly intervals of neoarsphenamine were given, after which an acute fulminating impetiginous eruption occurred on the face involving one eyelid. This necessitated hospitalization for a few days. With rest there was no improvement, when all medication was stopped; but when a dose of neoarsphenamine was given the impetiginous eruption cleared up promptly. It was therefore considered due to syphilis rather than to overtreatment with heavy metals. Since that time there has been a constant simple form of conjunctivitis and a rhinitis and bronchitis (unproductive). The serologic reaction remains unchanged. The conjunctivitis has now become so alarming and annoying that treatment has been temporarily discontinued. When iodides are given there is a continuous rhinitis even though the dose is small (from 5 to 15 grains). This conjunctivitis necessitates constant wiping of the excessive lacrimal secretions from the eyes, the appearance is like that of a hay fever patient, and a film of mucus covers the eyes, at times impairing vision. The general health of the patient is excellent excepting for some loss of excess weight, which is considered favorable rather than unfavorable. The treatment used for the conjunctivitis has been the use of neosilvol 10 per cent one drop in each eye three times daily and yellow mercuric oxide ointment placed in each eye at night to prevent the eyelids from sticking together. There are several questions I should like to ask with regard to this case: 1. Should neoarsphenamine and bismuth injections be continued? 2. Because the impetiginous eruption developed six weeks after neoarsphenamine alone had been given without the bismuth compound, the remainder of the treatment had been resumed as before, alternate doses of bismuth and neoarsphenamine being given. If injections are continued would you consider it better to give these in separate courses? 3. Do conjunctivitis, rhinitis and bronchitis follow overtreatment with these antisyphilitic preparations? 4. The sensitivity of the patient to iodides, in that the symptoms grow worse with their use, might be considered a contraindication for their use, mightn't it? 5. What method of treatment would you suggest to clear up the distressing triad of symptoms conjunctivitis, rhinitis and bronchitis? 6. Examination of the patient reveals absolutely no focus of infection and the organic function of all of the essential viscera is excellent, and yet the skin looks "scurvyish," deeply pigmented, dry, scaly, pruritic, atrophic and blotchy. Do you think this skin condition is due to arsenical therapy? If so, do you advise the use of sodium thiosulphate? I think that Queries and Minor Notes is the most interesting and instructive section of THE JOURNAL. Most of my colleagues in practice agree with me on this point and I am glad to see this part of THE JOURNAL expanding.

M.D., Michigan.

ANSWER.—The treatment for latent syphilis in a man of 62 must be given with greater caution than in a younger person. This patient obviously has an overtreatment syndrome. Such symptoms as excessive lacrimation, profuse rhinitis and bronchitis are due to intolerance to iodides. An acute impetiginous eruption that clears up after a dose of neoarsphenamine is probably also an iodide eruption and not due to syphilis.

It would appear, therefore, that iodides are contraindicated in this case. The description of the skin as deeply pigmented, dry, scaly, pruritic and atrophic suggests an arsenical pigmentation and should be a warning signal against further neoarsphenamine injections. The treatment that would seem advisable in the patient's present situation would be a preliminary course of sodium thiosulfate injection intravenously in doses

of 1 Gm. in 5 cc. of sterile distilled water twice weekly for from six to eight doses, then a rest period of three months and a Wassermann test at the end of this period.

If the reaction is still positive, bismuth salicylate should be given in doses of 0.2 Gm. for ten doses once a week. Further treatment should consist of alternating courses of bismuth salicylate and a mild mercurial preparation such as mercury with chalk by mouth.

VITILIGO

To the Editor:—A white woman, aged 48, apparently in perfect health, for the last six or eight months has had large irregular blotches of depigmentation on the dorsum of both hands but nowhere else. The skin in the affected areas appears almost white, contrasting against the neighboring portions of the skin, which are normally pigmented but appear brown because of the contrast. When exposed to sunlight the white areas develop quickly an erythema, apparently from the lacking protection pigment. She states that the areas affected are becoming gradually larger. What is the cause? What is the treatment? If there is no treatment, please give a prescription for a colored ointment or salve that may be put on the depigmented areas.

W. L. BENISHEK, M.D., Aurora, Ill.

ANSWER.—Vitiligo is a chronic skin disease characterized by areas of depigmentation, usually symmetrical, often bordered by a zone of hyperpigmentation. It may appear anywhere on the body, but the backs of the hands are a favorite point of onset. It progresses slowly without subjective symptoms. The cause of vitiligo is not known. The chief theories of its etiology are (1) syphilis, (2) toxic conditions, (3) heredity, (4) trophoneurosis, (5) endocrine disturbance.

1. Syphilis is not accepted by many as the cause of vitiligo. It is regarded by the best authorities as on a par with the other disturbances of metabolism. Gaucher (Sur l'étiologie du vitiligo, *Ann. de Dermat. et Syph.* **3**:1113, 1902) says: "Syphilis produces nutritional disturbances like those caused by any chronic intoxication, frequently causing, among other signs, lessened elimination of urea and lower percentage of urinary chlorides. There is nothing astonishing in seeing vitiligo in the syphilitic, for the syphilitic toxins may be of themselves capable of giving rise to pigmentary alterations in the skin."

2. Besides syphilis, vitiligo is often associated with lichen planus, psoriasis, typhoid, scarlatina or pernicious anemia, which may precede or accompany its onset. The theory that vitiligo may at times be a manifestation of chronic arsenic poisoning has yet to be proved, in the light of recent knowledge of the unreliability of tests for arsenic. There have been many reports of vitiligo, with or without melanoma, occurring as an aftermath of exfoliative dermatitis caused by arsphenamine or related drugs (Cannon, A. B., and Karelitz, Marie B.: Vitiligo from Arsphenamine Dermatitis and from Arsenic of Unknown Origin, *Arch. Dermat. & Syph.* **28**:642 [Nov.] 1933). In view of the well known ability of arsenic and bismuth to upset the pigmentary mechanism, it is not hard to believe that these drugs may have a causative relation to some cases of vitiligo.

3. There have been a few reports of vitiligo occurring in several generations of the same family. The occasional association of vitiligo with retinitis pigmentosa, a disease in which heredity is the chief etiologic factor, strengthens this theory; but this does not occur with sufficient frequency to warrant placing vitiligo among the hereditary disorders.

4. Vitiligo is often associated with nervous disease, migraine, melancholia, insanity, tabes dorsalis and toxic neuritis. S. W. Becker (Vitiligo, *Arch. Dermat. & Syph.* **28**:497 [Oct.] 1933) mentions its relation to lichen simplex chronicus, general neurodermatitis, neurotic excoriations and dermographism. He emphasizes the neurocirculatory instability in vitiligo patients with low blood pressure and low basal metabolism and quotes Levy, Frankel and Juster's observation of the same capillary constriction in the depigmented zone and in the finger tips as that which has been seen in alopecia areata.

5. Hyperthyroidism is frequently an accompaniment of vitiligo. Jay F. Schamberg (in discussion on Lane, J. E.: Vitiligo and Syphilis, THE JOURNAL, July 5, 1919, p. 30) reported having seen the two diseases develop simultaneously.

Hypothyroidism is also sometimes associated with vitiligo, and Addison's disease has been noted in association with vitiligo.

Scleroderma, in which hyperpigmentation commonly occurs, has been accompanied by vitiligo in many instances, and the same can be said of morphea. Now that hyperparathyroidism has apparently been implicated in the production of scleroderma, the argument for the endocrine etiology of vitiligo has been strengthened (Leriche, R., and Jung, A.: Les traductions tissulaires de l'hyperparathyroïdisme dans la sclérodermie, *Presse méd.*, Aug. 31, 1935, p. 1361).

Alopecia areata and vitiligo are often seen together, but this does not help much in any decision as to etiology.

The treatment of vitiligo has been generally held as of no value, but recently encouragement has been offered. Lindsay's method of treatment by intravenous injection of gold sodium thiosulfate, though frequently unsuccessful, has had support from the report of J. L. Grund (Treatment of Vitiligo with Gold Thiosulfate Given Intravenously and Subcutaneously, *Arch. Dermat. & Syph.* **31**:867 [June] 1935), who saw distinct benefit from both intravenous and subcutaneous injections.

Ultraviolet radiation used over a long time stimulates pigment formation in most cases. Effects are made to enhance its action by intravenous injection of acriflavine base, beginning with 5 cc. of a 0.5 per cent solution in water, repeated every third day, with gradual increase in dosage. Great care must be taken not to get any of the solution outside the vein, for it is very irritating. Albuminuria, nausea, vomiting, headache and fever are possible complications. The patients must be warned not to expose themselves to strong sunlight, and ultraviolet treatments must be given cautiously (Zakon, S. J.: The Combined Trypaflavine Quartz Light Treatment of Psoriasis Vulgaris, *Illinois M. J.* **61**:444 [May] 1932).

Painting the depigmented areas with an alcoholic solution of oil of bergamot before ultraviolet treatment has seldom been helpful, probably because a sensitization to oil of bergamot is necessary to the production of the dermatitis that brings on the pigmentation.

One of the simplest methods of concealing the white spots is to paint them as often as needed with a 0.25 to 0.5 per cent aqueous solution of potassium permanganate. William Allen Pusey (The Principles and Practice of Dermatology, New York, D. Appleton & Co., 1924, p. 972) suggests

	Gm. or Cc.
Glycerin	1.0 to 4.0
Zinc oxide Calamine powder aa	12.0
Water ad	120.0

To this sulfonated bitumen is added until the right shade is obtained (usually from two to fifteen drops).

Bleaching the hyperpigmented border helps to make the depigmented patches less conspicuous. A 30 per cent solution of hydrogen peroxide, 1 part, anhydrous wool fat, 6 parts, and petrolatum to make 10 parts may be applied to a small area once a day. If it causes irritation, one should stop its use and wait for the inflammation to subside. If necessary, the hydrogen peroxide content may be increased.

MORTALITY STATISTICS OF INJECTION WITH NEOARSPHENAMINE AND INJECTION OF VARICOSE VEINS

To the Editor:—Kindly quote me mortality statistics concerning the relative risk between varicose vein injection and neoarsphenamine injection.

M.S., Wisconsin.

ANSWER.—The mortality statistics of neoarsphenamine injections as compared with fatalities following the injection treatment of varicose veins are difficult to interpret. The arsphenamine mortality has been analyzed by Stokes (Modern Clinical Syphilology, ed. 2, Philadelphia, W. B. Saunders Company, 1934). He gives the following summary of statistics:

Year	Author	Injections
1910-1913	Leredde and Jamin	1: 3,777
1911-1914	Nichols	1: 5,000
1914-1918	British Base Hospital No. 39	1: 8,000
1917-1919	Guy (United States Army)	1: 12,500
1920	Meirowsky (European statistics)	1: 11,289
1920	Meirowsky arsphenamine	1: 13,000
1920	Meirowsky neoarsphenamine	1: 32,550
1920	Meirowsky death rate under 0.6 Gm.	1: 162,800
1920	Meirowsky death rate over 0.6 Gm.	1: 3,000
1916-1924	Section of Dermatology (Mayo Clinic)	1: 21,000
1919-1927	United States Navy	1: 17,526
1925-1931	University of Pennsylvania	1: 33,600

The average risk of death (avoidable and unavoidable) ranges according to these figures between 1: 7,000 and 1: 11,000.

The unavoidable risk of death ranges between 1: 56,000 and 1: 162,000. Good performance is estimated by Stokes at from 1: 15,000 to 1: 35,000, depending on material, system and dosage.

It is difficult to differentiate between avoidable and unavoidable deaths. The administration of arsphenamine to a patient with an obvious contraindication may result in death not from the drug but from its improper use. The mortality statistics from varicose vein injections have never been submitted to such a searching scrutiny as those due to arsphenamine. McPheeters reported a death rate of approximately 1: 5,000; Kettel estimated the total mortality as 1: 3,000. It must be emphasized that these figures represent the number of patients and not the number of injections.

The following data have been summarized from Kilbourne's article (THE JOURNAL, April 20, 1929, p. 1320):

Author	Cases		Deaths
McPheeters	53,000		11
Sicard and Gaugier	15,000	(120,000 injections)	0
Linser	15,000	(50,000 injections)	0
Delater	890		0
Douthwaite	2,000		0
Genevrier	4,000		0
Meisen	2,000		0

Kettel (*Zentralbl. f. Chir.* **58**:1498 [June 13] 1931) knew of twenty deaths in 60,000 patients who were treated by injections, a total mortality of 1:3,000 per patient. Half of these deaths were readily avoidable, owing to the use of toxic drugs or improper selection of cases. This would leave an unavoidable mortality of 1:6,000 per patient.

Because of the fact that individual experience with the injection treatment is growing, less toxic drugs are used, the importance of excluding patients with latent phlebitis is becoming more common knowledge, immobilization after treatment is avoided and vein ligations above veins suspected of harboring infection are more frequently employed, the mortality rate per injection of varicose veins certainly compares favorably with the percentage of good performance as given by Stokes, namely, from 1:15,000 to 1:35,000 per injection, as most patients receive from ten to thirty injections during treatment.

These figures emphasize that caution is necessary in interpretation and that average performance throughout the country is far better today than it was ten years ago. Large individual statistics may still be found without a single mortality. Because of the difference in clinical material, age groups and drugs, further comparison is not profitable.

HYPOTONIA AND PARALYSIS AFTER SUBARACHNOID INJECTION OF ALCOHOL

To the Editor:—A man, aged 45, with a negative Wassermann reaction and no detected tuberculous infection, has retention of the urine and of the bowel contents as the result of hypotonia following subarachnoid injection of 10 minims (0.6 cc.) of 95 per cent alcohol. His family history is negative. He had the usual childhood exanthems. He never had any cord lesions as a child. Five years ago an iron spike was driven deep into the right buttocks and this laid him up for several days. A few weeks later he began having sciatic pain. He has had occasional colds and grip. He has not had pneumonia or venereal diseases. The present trouble started five years ago as sciatica, diagnosed by several doctors in private practice and at clinics. He has several teeth that probably carry infection but have not been roentgenographed. The blood pressure is 138 systolic, 84 diastolic. The pulse rate is 82. He is nervous. He walks with a limp and a forward stoop favoring the painful right leg, which pains excruciatingly from buttock to ankle posteriorly, following the course of the sciatic nerve. Otherwise his physical condition is normal. He has been given scores of medicines during the past five years. Lately he had 40 cc. of physiologic solution of sodium chloride injected around the sciatic nerve at a point joining the fold of the gluteal muscle but this gave no satisfactory result. Following the advice of several physicians he was given 10 minims (0.6 cc.) of 95 per cent ethyl alcohol fifteen days ago through the third lumbar interspace. A medium size spinal puncture needle was used and the duration of the injection was three and a half minutes while he lay on his left side and in a 20 degree Trendelenburg position. He was not permitted to get up for seventy-two hours. During the first twelve hours he lay with the hips slightly elevated. He also lay on his left side for the first six hours with occasional leanings on the back and stomach. The pain disappeared almost at once after the injection. Incontinence of urine and of the bowels persisted for twenty-four hours. Then retention developed and is yet present. The left knee jerk is present, but not the right. There is light anesthesia to a pin point over the third and fourth sacral segmental areas of the skin, which is complete except for smaller areas on the left side. Anesthesia of the skin passed farther down the posterior surface of the thigh but this is less now. Muscle power is gradually but slowly returning in the right limb, although the knee often buckles under him. He can localize deep pressure of the finger on the muscles of the limb, yet he cannot direct the movements of the right leg with his eyes shut. When sitting on a chair he says that he has the sensation of having the testicles under pressure, as though they were being squeezed. The sole of the right foot is very sensitive and recently it has had a disagreeable burning sensation. The left limb is normal. The patient is very nervous and restless. There is no fever; pulse and blood pressure are normal. He feels the discomfort from retention in the bladder and lower part of the bowel but he cannot pass the urine voluntarily. Please comment on prognosis as to bowel and bladder. What can be done to hasten the return to normality? Kindly omit name and address.

M.D., New York.

ANSWER.—When strong alcohol comes in contact with sensory nerve fibers it produces anesthesia and relieves pain in the area of the blocked nerve. Similarly it causes paralysis and subsequent atrophy when brought in contact with motor nerves. Consequently unless paralysis of the legs and sphincter disturbance already are present, an injection such as the one given in this case should not be made without having the patient understand that relief from pain is likely to be obtained only at the price of paralysis. It is unfortunate that recent writers have spread the belief that injections of this kind can be given without considerable risk of paralysis. One need only recall the extensive experience with alcohol injection for trigeminal neuralgia, which has shown that, whenever the alcohol has accidentally reached such motor nerves as the third, sixth and motor branch of the fifth nerve, paralysis of more or less prolonged duration has invariably occurred. In this case, in which probably only the fibers of the cauda equina were reached and not the spinal cord itself, it is likely that there will be recovery from the paralysis and sphincter disturbance within six months.

DIAGNOSIS OF UNUSUAL ERUPTION

To the Editor:—Miss A. K., aged 19, white and single, complains of having had for the past six years on changes of weather from warm to cold or dry to moist a rash located over the extensors of her fingers of both hands and over her lower extremities from the toes to the lower third of her thighs. The rash appears to be like a blister, lying on a red base but on palpation hard to touch. With the appearance of the rash, the areas involved itch intensely. With a change back to warm or dry weather the rash spontaneously disappears, leaving no discoloration or changes over the involved areas. Physical examination is negative. I have not seen the rash but have described it as learned from her history. What is the possible cause of the condition? What can be done in the way of treatment? What is the prognosis? Kindly omit name.

M.D., New York.

ANSWER.—Three possibilities suggest themselves: (1) a contact dermatitis, (2) erythema multiforme, (3) dermatitis herpetiformis.

1. A contact dermatitis would be due to sensitization to some material with which the patient comes in contact only occasionally. Does she wear different clothing in cold damp weather? Her daily habits must be examined minutely to reveal every unusual contact. The change of weather may be only a coincidence, not as regular as the patient thinks. Patch tests should be made between attacks to discover the one or several sensitizations. The vesicles of a sensitization dermatitis are very superficial and are easily ruptured. The report of a hard, blister-like eruption need not mean actually a vesicular one, for patients frequently use that term in describing wheals or papules.

2. Erythema multiforme might have this distribution, though in repeated attacks it ought to involve the backs of the hands or the mucous membrane of the mouth to some extent. Itching is unusual in erythema multiforme.

3. Dermatitis herpetiformis would seldom involve the same areas on successive attacks and would not be likely to clear completely between attacks as this does. It often is vesicular, but the vesicles are not hard.

It is manifestly impossible to venture any diagnosis on so meager a basis. The doctor should see his patient during the next period of cool damp weather and get a first hand idea of the eruption.

VACCINES IN ARTHRITIS

To the Editor:—I have a patient who has a form of chronic arthritis in whom under ordinary circumstances I would use the streptococcus vaccine (intravenous) of Clawson and Wetherby. This patient, however, is quite fleshy and it is practically impossible to see any veins in her arms. I would appreciate your telling me what preparation could be used for this purpose either subcutaneously or intramuscularly. Please omit name.

M.D., Michigan.

ANSWER.—There are many streptococcus vaccines or allied substances available for the treatment of chronic infectious (atrophic, proliferative, rheumatoid) arthritis, such as the vaccine of Cecil (New York), of Rosenow (Rochester, Minn.), of Swift (New York), of Crowe (London), and the antigen of Small (Philadelphia). These can be obtained at little expense from their originators; some are commercially available. Some of them are usually given subcutaneously. Those which are generally prescribed intravenously can be given subcutaneously also, as a rule. However, Clawson and Wetherby have argued that subcutaneous administration is likely to increase rather than decrease a patient's hypersensitivity to streptococci and that the intravenous method is more likely to produce desensitization. The basis for their belief is derived from animal experiments and from agglutination tests and tests of cutaneous sensitivity of debatable significance. The statement that the subcutaneous administration of small doses of the vaccines mentioned is often or regularly likely to produce recognizable clinical hypersensitivity and unfavorable effects is not borne out by the facts and observations from much clinical experience.

While each of the originators is inclined to believe (or hope) that the method of selection and preparation of his respective

vaccine has made it more nearly specific than that of others, it is the opinion of disinterested observers of wide experience that regardless of the choice of vaccine or its method of administration results are generally similar. All these vaccines are somewhat alike, all are probably relatively (although not entirely) nonspecific, and all probably produce (in suitable individuals at least) some degree of what is called, for lack of better knowledge, "nonspecific desensitization." Current preference for small doses, to avoid constitutional or focal reactions, seems well founded.

TATTOOING OF EYES

To the Editor:—A man, aged 35, received a blow in the left eye five years ago. He has total loss of vision and cannot even recognize light. There is no pupil. The cornea is a light, faded blue. Before the accident the cornea was a deep blue. The eye is conspicuous chiefly because of the light cornea. Is there any way to have this blind eye tattooed in the region of the cornea with a blue pigment so that the blind eye will match the normal eye? If so, where is the work being done and who is capable of doing it? M.D., Pennsylvania.

ANSWER.—If the iris alone has faded, nothing can be done to improve the appearance. If the cornea is bluish white (the iris not being seen through the scar) a central round tattooed area giving the appearance of a black pupil will improve the appearance. There has been no satisfactory color tattooing of the cornea. Dozent Guist, formerly of the second eye clinic in Vienna, experimented with various reagents to produce color with little or no success. Only dark brown (from gold chloride) or black from platinum chloride have been used with success.

TREATMENT OF PYELITIS

To the Editor:—The patient I am writing about is 26 years of age, is married, and has one child a year old. This is the second attack of pyelitis the patient has had since childbirth. She had two similar attacks about six years ago and one at the age of 3. The urine is full of pus. Pain is present in both flanks. The reaction of the urine is slightly alkaline as a rule. Culture of the urine shows Bacillus proteus. Intravenous pyelography shows complete double ureters on both sides with no obstruction. Bacilluria is present even after the urine is clear microscopically. Treatment has consisted of alternate alkalinization and acidification (degree not determined) of urine, forcing fluids, halibut liver oil or carotene. The ketogenic diet has not been tried. Could you suggest any line of therapy that might clear up this bacilluria? The patient is at present in bed. Kidney lavage has been done on previous occasions with resulting clearing up of the pyuria but not the bacilluria. Any help would be greatly appreciated. Do you think autogenous vaccination might help? M. H. SCHNEIMAN, M.D., Philadelphia.

ANSWER.—Urinary infections with Proteus vulgaris are more difficult to cure than Bacillus coli infections. The fact that the infection has been repeatedly reduced to a bacilluria makes it possible that ammonium chloride (enteric coated pills), 1 Gm. four times a day, and increasing doses of methenamine, starting with 0.3 Gm. four times a day and increasing to 0.65 and 1 Gm., may cure the disease. The value of the autogenous vaccine in proteus infections is questionable.

If unsuccessful, the ketogenic diet should be tried. A practical form of ketogenic diet compiled by the Section on Urology and the Rochester Diet Kitchen is helpful in arranging this diet. Further suggestions may be had from the article "The Ketogenic Diet in Treatment of Bacillurias in Females," by C. N. Cook (published in the *Journal of Urology* **32**:153 [Aug.] 1934).

ZINC IONIZATION IN HAY FEVER

To the Editor:—Kindly inform me as to the status of the zinc ionization method of the treatment of hay fever. Does it give permanent results? Kindly give references. Also is there any advantage in the use of mechanical devices, such as Filteraine, in the relief of symptoms of hay fever? Please omit name. M.D., New York.

ANSWER.—The zinc ionization method for the treatment of hay fever has been used by many physicians but there is no unanimity of opinion. Many individuals are helped a great deal; others are moderately improved; a third portion state that they see no improvement whatever. Not many report that the results are permanent much beyond the season for which the treatment is being given. Here and there are statements made that the patient is relieved for a number of years. From time to time, untoward results are reported. If the treatment affects the olfactory nerve, and it does so occasionally, anosmia results. Some people complain of inability to tolerate the presence of smoke after the ionization treatment, and on a number of occasions, with the cessation of nasal symptoms following ionization, asthma has set in promptly. Of course, it is not possible to state absolutely that the onset of asthma was due to the treatment, but time and the comparison of notes of many men may be important in this regard.

Any adequate device that filters the major portion of dust and pollen from the air is helpful and makes sufferers of hay fever feel more comfortable.

References:

Warwick, H. L.: Treatment of Hay Fever and Its Allied Conditions by Ionization: Preliminary Report, *Laryngoscope* **44**: 173 (March) 1934.

Alden, A. M.: A Year's Work with Ionization in the Treatment of Hay Fever, *Laryngoscope* **44**: 741 (Sept.) 1934.

Hollander, A. R.: Ionization as a Prolonged Palliative in Vosomotor Rhinitis, *Arch. Otolaryng.* **21**: 448 (April) 1935.

DANGERS OF SELF TREATMENT WITH IODIDES

To the Editor:—Newspaper clippings entitled "For Better Metabolism" and "The Tired College Girl" by Dr. William Brady (66 Agassiz Circle, Buffalo) both recommending that every one take a definite ration of iodine at regular intervals have been brought to my attention by patients. Dr. Brady offers to send instructions for taking a suitable iodine ration to any one who requests them and encloses a stamped, self-addressed envelop. He recommends that adults take one drop of tincture of iodine in a glassful of water each day in each third month. He states that this often works magic in cases of a chronic tired feeling and lack of usual or former ambition, energy or pep, with little refreshment from rest or a vacation, a tendency toward accumulation of flabby excess weight, depression of spirits or melancholia, premature aging, graying and falling of the hair, poor circulation or mental torpor. Dr. Brady also says that it may prevent high blood pressure or postpone hardening of the arteries. Is there any recognized basis for these statements? There seems to be no substantiation of them in the medical literature. Hartsock (THE JOURNAL, May 1, 1926, p. 1334), states that "the continuous use of iodine over a long period of time should never be prescribed for adults, and when its periodic use is prescribed, frequent observations of the pulse and weight should be made." Please omit name. M.D., Washington.

ANSWER.—Hartsock's statement is much more competent than that of Dr. Brady. Advice by mail for any kind of condition is properly frowned on; and the "absent treatment" by iodide is a good example of possibly pernicious therapy, when one thinks that "the tired college girl" might be suffering the early stages of tuberculosis or be on the verge of neurasthenia from unhygienic living, neither of which conditions would be helped by Dr. Brady's advice and both of which would be harmed by delay in instituting the proper treatment.

CHRONIC GONORRHEA

To the Editor:—I am writing to inquire as to further treatment that may be tried in a patient, aged 34, who contracted gonorrhea in 1929 and was actively treated by his physician, first by irrigations and later by massage, sounds and vaccines. Since then he has received all the methods of treatment, both vigorously and with rest periods, and yet he complains of a morning discharge, which sometimes is quite profuse. Smears are negative for the gonococcus. The prostate strippings are clear. Preputial infection has been ruled out. An endoscopy revealed granulation tissue and nothing else. The prostate feels normal, as do also the testicles and the epididymis. All sorts of antiseptics and even diathermy have failed. There is no stricture. Any suggestions would be greatly appreciated. Kindly omit name. M.D., Pennsylvania.

ANSWER.—If there are granulations in the urethra, these are frequently the cause of prolongation of a discharge and should be destroyed. This can be accomplished either by direct application of a fairly strong solution of silver nitrate through the urethroscope or by repeated instillations of a mild solution of silver nitrate. Some patients continue to have a discharge from protracted and too energetic treatment. When the granulations have disappeared it might be well to give the patient a long rest, omitting all forms of treatment.

INHALATION ANESTHESIA IN WHOOPING COUGH

To the Editor:—In the January 11 issue of THE JOURNAL, under Queries and Minor Notes, inhalation anesthesia in whooping cough is discussed. In connection with this query the following report is of interest:

Quite a few years ago I saw a patient about 10 years of age, having a fulminating attack of appendicitis. He was in about the third week of a very severe attack of whooping cough, with spasms of coughing every few hours. His attending physician stated that it was one of the most severe cases he had ever seen. Operation was imperative and ether was administered. The anesthesia proceeded smoothly and a gangrenous appendix was removed. The patient had no respiratory difficulties during the operation. About six hours after the operation he had a very mild coughing spell but never had any further attacks. Apparently his whooping cough was cured, and he made an uneventful recovery.

With this very favorable experience in mind I tried to extend the etherization to other whooping cough patients but had no opportunity to do so. D. C. PATTERSON, M.D., Bridgeport, Conn.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ARIZONA: Phoenix, April 7-8. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Medical (Regular).* Little Rock, May 12-13. Sec., State Medical Board of the Arkansas Medical Society, Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, May 12. Sec., Dr. Clarence H. Young, 207½ Main St., Little Rock.

CALIFORNIA: *Reciprocity.* San Francisco, May 13. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, April 7. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

HAWAII: Honolulu, April 13-16. Sec., Dr. James A. Morgan, 48 Alexander Young Bldg., Honolulu.

IDAHO: Boise, April 7. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, April 7-9. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA. *Basic Science.* Des Moines, April 14. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

MINNESOTA: *Basic Science.* Minneapolis, April 7-8. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, April 21-23. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 7. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW MEXICO: Santa Fe, April 13-14. Sec., Dr. E. LeGrand Ward, Sena Plaza, Santa Fe.

RHODE ISLAND: Providence, April 2-3. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

WISCONSIN: *Basic Science.* Madison, April 4. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* May 6-8, June 22-24, and Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Oral, clinical and pathological examination of all candidates will be held in Kansas City, Mo., May 11-12. *Applications must be received not later than April 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh. (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City, Mo., May 11 and New York, Sept. 26. *All applications and case reports must be filed sixty days before date of examination.* Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Kansas City, Mo., May 11. *Applications should be filed with the secretary on or before April 1.* Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 9. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: St. Louis, Mo., May 8-9. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Kansas City, Mo., May 8-10. Sec., Dr. B. R. Kirklin, Mayo Clinic, Rochester, Minn.

AMERICAN BOARD OF UROLOGY: Kansas City, Mo., May 8-10. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Louisiana December Report

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, Dec. 5-7, 1935. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, all of whom passed. Three physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Howard University College of Medicine		(1935)	82.3
Emory University School of Medicine		(1934)	86.9
Northwestern University Medical School		(1935)	86.5
University of Kansas School of Medicine		(1935)	83.2
Louisiana State University Medical Center		(1935)	83.8,* 85,* 85.1,* 85.6*, 85.9,* 86.7,* 88.9*
Tulane University of Louisiana School of Medicine		(1931) (1932) 87.9,† (1935) 82, 84.1, 84.5, 85.3	84.8,
University of Nebraska College of Med.		(1930) 84.5, (1935)	84.7
Meharry Medical College		(1934)	82.2, 84.5,† 84.7, (1935) 84.
University of Tennessee College of Medicine		(1933)	80.6, (1935) 80, 80.4, 84.1, 84.7
Baylor University College of Medicine		(1935)	81.8
Fort Worth School of Medicine, Texas		(1911)	82.8
University of Wisconsin Medical School		(1935)	82.5

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1934)	California
University of Michigan Medical School		(1931)	Michigan
University of Pennsylvania School of Medicine		(1929)	Illinois

* This applicant has received an M.B. degree and will receive an M.D. degree and Louisiana license on completion of internship.

† Granted temporary permit. Permanent certificate will be issued on completion of United States citizenship.

Missouri October Examination

Dr. E. T. McGaugh, state health commissioner, reports the written examination held in Kansas City, Oct. 24-26, 1935. The examination covered 14 subjects. An average of 75 per cent was required to pass. Twenty candidates were examined, 19 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1935)	86.5
Howard University College of Medicine		(1934)	83.6
Northwestern University Medical School		(1935)	87.7
Rush Medical College		(1935)	83.4
School of Medicine of the Div. of the Biological Sciences		(1935)	89.5
University of Illinois College of Medicine		(1935)	81, 86.3
State University of Iowa College of Medicine		(1934)	83
University of Michigan Medical School		(1934)	90.3
University of Minnesota Medical School		(1935)	83
St. Louis University School of Medicine		(1932) 77.7, (1934)	90.4
Washington University School of Medicine		(1932) (1935) 85.5, 86.8	82,
Creighton University School of Medicine		(1935)	81.7
University of Nebraska College of Medicine		(1934)	81.9
Woman's Medical College of Pennsylvania		(1934)	84.1
Meharry Medical College		(1934)	80.6

School	FAILED	Year Grad.
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg		(1920)*

Twelve physicians were licensed by reciprocity and 1 physician was licensed by endorsement on October 23. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois Col. of Med.		(1927), (1929), (1935)	Illinois
State University of Iowa College of Medicine		(1905), (1934)	Iowa
University of Kansas School of Medicine		(1934)	Kansas
American Medical College, Missouri		(1912)†	Illinois
Creighton University School of Medicine		(1932)	Kansas
University of Nebraska College of Medicine		(1934)	Nebraska
University of Tennessee College of Medicine		(1910) (1930) Tennessee	Mississippi,
Marquette University School of Medicine		(1932)†	Illinois

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Pennsylvania School of Medicine		(1934)	N. B. M. Ex.

* Verification of graduation in process.

† License has not been issued.

Tennessee December Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Memphis, Dec. 18-19, 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Meharry Medical College		(1934)	84.8
University of Tennessee College of Medicine		(1935)	77.1, 80.1, 80.3, 80.4, 81.1, 81.1, 81.4, 81.4, 81.5, 81.6, 81.9, 83.1, 83.3, 83.5, 84.1, 85.3, 85.5, 85.6, 85.9, 86.3, 86.9, 87, 87.8
Licentiate of the Royal College of Physicians of Edinburgh		(1933)	82.6

Two physicians were licensed by endorsement during December. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1933)	N. B. M. Ex.
Emory University School of Medicine		(1933)	Georgia

Wyoming October Report

Dr. G. M. Anderson, secretary, Wyoming State Board of Medical Examiners, reports the written examination held in Cheyenne, Oct. 7, 1935. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Six physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Nebraska College of Medicine		(1934)	83

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1933)	Iowa, (1935) Utah
Rush Medical College		(1935)	Utah
University of Illinois College of Medicine		(1933)	Illinois
University of Nebraska College of Medicine		(1928), (1931)	Nebraska

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Northwestern University Medical School		(1933)	N. B. M.Ex.

Book Notices

Length of Life: A Study of the Life Table. By Louis I. Dublin, Ph.D., Third Vice President and Statistician, Metropolitan Life Insurance Company, and Alfred J. Lotka, D.Sc., Assistant Statistician, Metropolitan Life Insurance Company. Cloth. Price, $5. Pp. 400, with 53 illustrations. New York: Ronald Press Company, 1936.

This is a reference book for the public health official, the health educator, or the physician who has frequent occasion to refer to facts relating to longevity. It is an interpretation of the life table for the nontechnical reader, with certain information on the construction of life tables for the statistician who deals in a relatively simple way with the facts concerning length of life. The authors have achieved the difficult aim of showing with the aid of numerous tables and graphs that "human life is a very personal affair." They have discussed in an interesting way the life span, mean length of life, life tables antique and modern, gain in life expectancy at various ages but especially at birth, and the geographic, biologic and hereditary aspects of longevity. Recognizing the unpractical nature of the advice to make a wise choice of grandparents, they seem unable nevertheless to find in their statistics any better assurance of a long life. The contributions of medical and sanitary science to longevity and, of course, primarily to increasing the mean length of life rather than the ultimate span thereof, are interestingly though briefly outlined. The authors agree with other observers that ancient man, as far as the meager records available make estimations possible, seems to have had as long a span of life as modern man, and perhaps longer, once he got past the extraordinarily severe hazards of birth and infancy that prevailed in ancient and medieval days. Relationship of longevity to occupational hazards, to physical defects, to population problems and to economic problems form the subjects of later chapters. Perhaps few readers will wish to read this book at a sitting, yet it deserves something more than a mere place among the statistical tables, of which it presents many and excellent, and the graphs with which it abounds, for the authors have succeeded in making the subject entertaining even though statistical. There is a good index.

Pollen Grains: Their Structure, Identification and Significance in Science and Medicine. By R. P. Wodehouse, Ph.D., Scientific Director of the Hayfever Laboratory, the Arlington Chemical Company, Yonkers, New York. Cloth. Price, $6. Pp. 574, with 123 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1935.

This is an exhaustive study of the history and basic principles of pollen morphology, with a key and descriptive classification of the pollen grains of 450 species of the wind pollinated plants of North America. Accompanying the text, but not in a convenient position for comparison with the descriptions, are beautiful enlarged drawings of the pollen grains of about a third of the species discussed. Considerable space is devoted to the genesis and phylogenic significance of pollen grain characters. Even the eternal question of heredity versus environment is not overlooked, as evidenced by "Inasmuch as the numerical type of symmetry of the pattern is determined by the position and number of the germinal apertures, it may be stated that the number and arrangement of the elements in the symmetry patterns of pollen grains are haptotypic characters, that is to say, are the result of their cellular interrelations and directly due to the conflict of the law of bipartition with rectangular intersection, in opposition to the tendency to assume the least-surface configuration." In the orderly development of the author's conclusions he allows himself only occasional diversions. At the end of the historical review, which strangely enough does not include any of the contributions to the subject during the past forty years, the author allows four pages to a description of his methods used in mounting and staining pollen grains and four pages to directions for collecting pollen in large amounts. The short chapter contributed by Dr. Erdtman on fossil pollen statistics and the eighteen pages devoted to an elementary discussion of the rôle of pollens in the causation and diagnosis of hay fever, which are obviously intended to justify the subtitle of the book, could well be left out without detracting from its usefulness. The practical application of pollen grain identification is suggested in a chapter discussing the author's study of the pollen content of the air in his own home city. The book will be of only academic interest to physicians not specializing in allergy. It will be of great value to those allergists who have the time and facilities for pursuing the critical study of pollen morphology. While the author strongly favors the examination of pollen grains in their moistened and expanded condition and has so drawn most of his illustrations, he usually mentions their characteristics as seen in their dry form. The book will thus be found useful to those who are familiar with the widely used method of atmospheric pollen study with slides coated with petrolatum or other oils that do not expand the pollen grains caught on them.

Recent Advances in Laryngology and Otology. By R. Scott Stevenson, M.D., Ch.B., F.R.C.S., Surgeon, Metropolitan Ear, Nose and Throat Hospital, London. Cloth. Price, $5. Pp. 346, with 128 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1935.

The literature in the field of otolaryngology, rhinology and laryngology as in the other specialties has grown both in this country and abroad to large proportions. To be fully cognizant of it would require the reading of a considerable number of foreign and domestic journals limited solely to the special field, not to speak of those pertaining to related subjects. It would, of course, be easy to dismiss the whole affair by saying that much of what appears in print is relatively unimportant and repetitious. This attitude would express, however, less than half the truth. In otology, rhinology and laryngology there is a new and enthusiastic attitude in the past few years indicative of a real advance in the knowledge of the difficult problems facing the specialty. For example, much is being said and written of carcinoma of the upper air and food passages, and rightly so. The malignant growths in this area have been recognized as being often of a highly radiosensitive nature, and their reaction to radium and roentgen therapy is frequently most encouraging. The work of Hilding and others on the nature of ciliary action has revivified the interest of all in the physiology of the nose and accessory sinuses. Weaver and Bray at Princeton some years ago exposed the auditory nerve in cats, placed suitable electrodes on it, and by means of proper amplifying apparatus were able in a distant sound-proof room to reproduce sounds spoken into the anesthetized animal's ear. These studies immediately stimulated an intense investigation here and abroad in a renewed effort to clarify the fundamental nature of hearing. In order to keep abreast with all the new and important advances, those interested turn to yearly reviews, which are helpful though they can give only the transient point of view. The author has covered the ground over a period of years, giving him the opportunity of more mature judgments. His selection of topics of importance is excellent. Continental, British and American opinion is consulted. Considering the large field he had to cover, he has done extremely well, ranging as he does from agranulocytosis to cancer of the larynx, bronchoscopy and esophagoscopy, cardiospasm, chronic nasal sinusitis, hearing tests, the mechanism of the labyrinth and numerous other conditions. If there is one topic left out, it is suppuration of the petrous portion of the temporal bone, which will undoubtedly appear in the next edition, which this wholly satisfactory review deserves.

Chronic Streptococcal Toxaemia and Rheumatism. By J. D. Hindley-Smith, M.A., M.R.C.S., L.R.C.P. Cloth. Price, 7s. 6d. Pp. 275. London: H. K. Lewis & Company, Ltd., 1935.

The purpose of the book is not definitely stated in the author's preface or foreword, and a reading of it does not make clear just why it was written. The first chapter discusses in broad, vague and general terms the subject chronic toxemia of various sorts, including acid toxemia. The second chapter deals in the same general fashion with chronic infectious toxemia. Some cursory remarks on streptococci make up chapter 3. The author believes that, of the infectious toxemias, the toxemia attributable to streptococci is most widespread and most important yet least well defined. Chronic streptococcic toxemia may lead to a life of chronic disability and invalidism from youth to old age. Its manifold symptoms appear during the three stages of the disease and are listed in chapters 4, 5 and 6. The symptoms which "the streptococcic child" (sic) and the older victims of streptococcic toxemia are likely to present are, according to the writer, indeed numerous and arise from disturbances of any or all functions and tissues of the body. From the title of the book and from a remark here and there one is led to believe that "chronic rheumatism" and "arthritis" are frequent manifestations of this toxemia. Incidentally, nowhere is any attempt made to

define the terms "chronic rheumatism" or "arthritis" further; indeed, little is said about them. In the last chapter, entitled "Summary and Conclusion," one gets a little better idea of what the writer is driving at. The author says that he has taken cultures of the nasopharynges of an unstated number of normal persons and of persons who gave evidence of having chronic toxemia. The normal nasopharynx contains a mixed flora, only 5 to 10 per cent of the organisms of which are streptococci. Among patients affected by chronic toxemia, nasopharyngeal cultures may reveal organisms from 40 to 100 per cent of which are streptococci, often of the hemolytic variety. Such a "positive streptococcal index" presents evidence that the patient's immunity mechanism is somehow at fault and that that patient is a victim of, or a candidate for, chronic streptococcic toxemia. The author's treatment includes chiefly "immunization" by the use of small doses of streptococcus vaccine, preparation of which is not described, elimination of bacterial toxins by nasopharyngeal washings, and attention to diet, to the bowels, to foci, to "endocrine deficiency" and so on. No statistics on results are given. The book represents a hodgepodge of generalities and theories, of well known facts and unprovable hypotheses. Much of it is borrowed material, and what is presumably original is not backed up by data, figures or proof of any sort.

Medical Social Work: A Study of Current Aims and Methods in Medical Social Case Work. By Harriett M. Bartlett. Paper. Price, $1. Pp. 223. Chicago: American Association of Medical Social Workers, 1934.

This study of current aims and methods in medical and social case work is a report of the Committee on Functions of the American Association of Medical Social Workers in which there is a discussion of medical social work in relation to social case work and clinical medicine, and the rôle of the medical social worker in study and treatment.

Through the report there appears to be a friendly and understanding attitude toward the medical profession. Such statements as "since coordination is essential, it is important to emphasize the point that the physician always remains the leader of the team" seems to indicate an attitude of helpful assistance rather than of independent domination.

It is recognized that the problems with which the medical social workers are concerned grow out of illnesses and are only partially related to economic needs. The medical social worker endeavors to individualize in the study of these social difficulties. If all the recommendations and illustrations in the report represent the actual practice in this field, qualifications for competent medical social workers should be high.

It appears that medical social workers are endeavoring to establish themselves as a new profession, and the author complains in one section of the report "that the report of the Committee on the Costs of Medical Care, although permeated with a social point of view, barely makes mention of medical social service." This the author feels "suggests that the medical social worker has not yet adequately interpreted to either the medical profession or the public her possible contribution to the development of social medicine." The approach to medical social problems involves a recognition and interpretation of the emotions, mental attitudes, environmental disturbances, psychologic concepts, functional and mental disturbances, and other social factors surrounding and affecting the patient. In an attempt to develop methods of study and work, medical social workers have found it necessary in many instances to construct their own terminology. There seems to be a desire to attempt to apply orderly methods of thinking to accumulated experience. Thus by experimentation, test and evaluation of results the medical social worker aims to contribute to the attainment of a professional status.

The efforts of the medical social worker "are directed toward enlarging the understanding of the medical social factors and assisting patient and physician to integrate them into a broader and more effective plan, in which she herself undertakes by joint agreement, treatment of the social difficulties." The medical social worker conceives her function to be that of recognizing primarily the inner needs of the sick person. She is concerned, however, not only with persons but with ideas, and "in defining her rôle in any case must face the problem of objectives, prognosis, and the evaluation of results, all of which depend on sound methods of thinking.

If medical social work can be closely coordinated with the practice of medicine, serving both patients and physicians as an auxiliary or supplementary assistance, it will find many fields of usefulness. It is well to bear in mind, however, that medicine should serve as the primary agent in the application of appropriate remedies for the sick, and that medical social work should be utilized when desirable as a helpful supplement.

Die Zahnheilkunde im achtzehnten Jahrhundert: Ein Stück Kulturgeschichte. Von Hedvig Lidforss Strömgren. Paper. Pp. 232, with 53 illustrations. Copenhagen: Levin & Munksgaard, 1935.

Good textbooks dealing with the history of dentistry are scarce and this book is a welcome addition. As the author states, the eighteenth century is a critical period in the evolution of dentistry, one of rapid development following a long period of stagnation. Indeed, the crest of achievement of this century was not surpassed until the last half of the nineteenth century produced the dental engine, anesthesia and antiseptic methods of treatment. The French contributed the most to this progress, through the influence of Fauchard both as a practitioner and as an author; his Le chirurgien dentiste has been called the most famous dental book. To no little degree two other Frenchmen, Bourdet and Jourdain, added to the luster of France. The Surgeon Dentist was published first in 1728, with new editions in 1746 and 1786, and was translated into German in 1733. In addition to Fauchard, the author refers most often to the books of Berdmore and Pfaff; these three dentists were employed respectively by the royal families of France, England and Prussia. On the whole the selection and arrangement of the material in this book is to be commended. As the result of a defect in the plan there is some overlapping of chapter contents; it is a matter of regret that nothing new is presented with reference to the porcelain controversy. There is an excellent bibliography and a short biography of each dentist or scientist mentioned in the text, both of which are placed at the end of the book; there is an index of the illustrations but none of the subject matter. The German of the text is relatively easy reading and the book, therefore, is commended to both those interested in dental history and those searching for suitable reading to attain facility in German.

A Text-Book of Surgery for Dental Students. By G. Percival Mills, M.B., B.S., F.R.C.S., Honorary Surgeon, General Hospital, Birmingham, and Humphrey Humphreys, O.B.E., M.C., T.D., Lecturer on Dental Anatomy, Birmingham University. Fourth edition. Cloth. Price, $5; 14s. Pp. 342, with 63 illustrations. Baltimore: William Wood & Company; London: Edward Arnold & Co., 1935.

The purpose of the book is frankly stated in the preface: "In preparing the fourth edition of this book the authors have carefully preserved its original character as a work designed solely for students and practitioners of dental surgery. Surgical progress and the helpful criticisms of examiners and colleagues have led to the inclusion of many new sections and to much revision of old ones but, owing to changes in the syllabus of the Royal College of Surgeons, certain omissions have been possible and the book is not increased in size. It will be found to cover the requirements of the Royal College, and of those universities which publish a detailed syllabus." The book is a brief summary of the most essential facts that will enable an applicant to pass a licensing examination with the least possible effort. Why it should be called surgery is doubtful, as it is a mixture of bacteriology, pathology, surgery and various other subjects in about twenty chapters. Most of the material is clearly expressed in compact form, and it is admirably adapted to its avowed purpose. The chapter on fractures of the jaw is distinctly archaic and contains little or nothing with regard to modern methods of treatment.

In the October issue of the *Journal of the American Dental Association* an editorial entitled "For Dental Students" stated that "The texts so named . . . are one or another of the basic sciences for dental students. For the most part they are sketchy things, lacking in continuity, without breadth of foundation; books that give results with half explained or unexplained causes that stock the memory with a chaos of data partially or wholly unassociated and therefore unusable. They hark back to the days when courses in the sciences were skeletons of courses prepared for men who obviously would spend their days at the mechanics of dentistry without a disturbing

thought of bacteriology or pathology." At the present time the demands of dental practice require that the training in the fundamental medical sciences, while not necessarily identical in content, must be the same in quality for medical and for dental students. Unless this is true, there is no justification for the increased length of dental education. It is doubtful whether the present volume will be of much assistance to the dental student of today.

Über die Rhythmik der Leberfunktion, des Stoffwechsels und des Schlafes. Von Erik Forsgren. Paper. Price, 6:50 kroner. Pp. 56, with 14 illustrations. Stockholm: Isaac Marcus Boktryckeri-Aktiebolag, 1935.

This small monograph summarizes the highly creditable research work of the author and his collaborators on the rhythmic nature of liver function. They have found that during the twenty-four hours of each day the liver passes through two opposing phases or cycles of function. Each cycle begins where the other leaves off, rises to a climax and gradually subsides, to merge into the initial stage of the other cycle. These cycles may be called the assimilatory and the secretory phases respectively, and they vary as regards the time of occurrence in different species and even in different individuals of the same species. In man the assimilatory phase usually occupies the hours between 8 p. m. and 8 a. m., while the secretory phase occurs between 8 a. m. and 8 p. m. During the former phase the liver stores glycogen, water and protein and becomes correspondingly larger and heavier. Its bile content is at a minimum. During the secretory phase the glycogen and protein content of the liver falls, it gives up its water stores, and the lobules show an increased bile content. These two phases are reflected in the hourly variations of water, nitrogen and urobilin excretion and also in fluctuations of body temperature. Apparently, the rhythm of liver function is to some extent an inherent property of the organ. It is not, for example, greatly dependent on food intake. The author discusses the application of these observations to certain aspects of carbohydrate metabolism and diabetes mellitus. It is obvious that the phenomena of storage or excretion of metabolites, the majority of which directly or indirectly involve the liver, should be interpreted with the foregoing considerations in mind. This work should therefore be of interest to students of metabolism, both research and clinical.

A Practical Handbook of Midwifery and Gynæcology for Students and Practitioners. By W. F. T. Haultain, O.B.E., M.C., B.A., Gynæcologist, Royal Infirmary, Edinburgh, and Clifford Kennedy, M.B., Ch.B., F.R.C.S., Assistant Gynæcologist, Royal Infirmary, Edinburgh. Second edition. Cloth. Price, $5.25. Pp. 356, with 44 illustrations. Baltimore: William Wood & Company, 1935.

The authors attempt to cover the entire fields of obstetrics and gynecology in outline form. The task is accomplished at the expense of omitting many important details. The chapter on antepartum care is lamentably insufficient, but it most likely indicates the authors' lack of appreciation of adequate antepartum care. Whereas the authors recommend that the urine be tested for albumin once a month until the twenty-eighth week and more often after that time, they suggest that blood pressure determinations be made only at each examination except when albumin is found. However, since only three examinations are recommended during the entire gestation (at the first visit and five weeks and two weeks respectively before confinement) only three blood pressure readings are to be made during pregnancy in cases in which albumin is found. Furthermore, no mention is made of weighing patients and taking Wassermann tests or blood counts. It is unfortunate that under the heading of eruptive fevers the authors inadvertently included cardiac disease, diabetes and chronic nephritis. When a cesarean section is necessary in a cardiac case, the authors suggest spinal and chloroform anesthesia, both of which are dangerous for pregnant women. In the prophylactic treatment of preeclamptic toxemia the recommendation is made to examine systematically the urine of all pregnant women during pregnancy; but again there is no mention of blood pressure readings. The authors advocate repair of perineal lacerations before expulsion of the placenta. The senior author gets his patients out of bed on the third day after delivery. For uterine inertia during labor, solution of posterior pituitary, a combination of thymus extract and hypophysis extract and estrogenic substance are suggested. In cases of postpartum hemorrhage after expulsion of the placenta the authors first use a hot vaginal douche and if this is unavailing they employ a hot intra-uterine douche. Such douches are usually inefficient and time consuming and permit unnecessary loss of blood. The authors believe that dysmenorrhea caused by acute anteflexion of the uterus can be cured by pregnancy. In the section on ovarian tumors, granulosa cell tumors are mentioned but not arrhenoblastoma, Brenner tumor or disgerminoma. Furthermore, granulosa cell tumors are classified under benign tumors, though a distinct proportion of them are malignant. In the discussion of vaginal discharges, no mention is made of monilia infections. The treatment of tuberculosis of the female genitalia is summed up in one sentence: "Spontaneous cure may result by usual tubercular treatment combined with usual local treatments for pyosalpinx." The term "tubercular" endometritis is used instead of "tuberculous" endometritis. In a small book for students and practitioners it is surprising to find a description of the Wertheim operation for carcinoma of the cervix, which is an operation to be performed only by an experienced gynecologist. Throughout the book there are numerous references to proprietary remedies. The book is clearly printed and well written but it is hoped that in future editions, even if no other alterations are made, the chapter on antepartum care will be enlarged, because this subject is of the greatest importance in obstetrics.

Diseases of the Skin. By Frank Crozer Knowles, M.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Third edition. Cloth. Price, $6.50. Pp. 640, with 251 illustrations. Philadelphia: Lea & Febiger, 1935.

A complete revision is presented in this edition. The author has made a sincere attempt to include discussion of the newer items that have appeared in the literature bearing on the various subjects relating to the etiology and diagnosis of diseases of the skin. The work treats most of the cutaneous entities in a concise manner, with excellent reproductions of photographs to illustrate the material in the text. Diagnosis and differential diagnosis is discussed with amplification by differential diagnosis tables. The discussions of the subjects of allergy and allergic skin reactions, eczema, tuberculosis of the skin and tuberculids, and syphilis are worthy of special mention. The book is a good textbook of moderate size and should take its place as such for use by the medical student and as a ready reference book for the general practitioner, although it is not as comprehensive as some of the larger available textbooks.

Osnovy i dostizheniya sovremennoy meditsiny. Periodicheskie sborniki pod redaktsiey A. A. Bogomoltsa, V. M. Kogan-Yasnogo i D. D. Pletneva. Vol. II. [Fundamentals and Achievements of Contemporary Medicine.] Cloth. Price, 15 rubles. Pp. 340, with 15 illustrations. Kharkov: Meditsinskoe izdatelstvo U. S. S. R., 1934.

The aim of the publication is to issue periodically a collection of reviews on the more important subjects in medical practice. The function of these reviews is a critical evaluation of the existing knowledge as well as the presentation of the author's own views on the subject. The present volume contains papers on (1) nourishment as a factor in physiology and in pathology, (2) allergies, (3) the problem of edema, (4) functional diagnosis of diseases of the pancreas, (5) diagnosis of obscure and latent forms of malaria, (6) ileus, (7) surgery and irradiation in gynecology, (8) otosclerosis and (9) course of tuberculosis of childhood as gleaned from pathologic anatomy. The articles reflect a broad knowledge combined with a critical attitude. Each is supplemented by an extensive bibliography. They are not accompanied by summaries in a foreign language and for that reason will be available only to those who read Russian.

Food Values at a Glance and How to Plan a Healthy Diet. By Violet G. Plimmer. Cloth. Price, $1.50; 3s. 6d. Pp. 120, with 27 illustrations. New York & London: Longmans, Green & Co., 1935.

This is an English version of "what every housewife, cook or caterer should know about the science of nutrition." The fundamental requirements for the complete healthful diet are not only outlined but explained in a simple and concise manner. The distinctive feature of this booklet is a series of twenty-five colored charts comparing, in a graphic manner, the protein, fat, carbohydrate, mineral, water and vitamin content of the common foodstuffs. These charts, as indicated by the title of the book, offer a rapid means for comparison of food values and should be useful for teaching purposes.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Injuries Attributed to Application of Hair Dye; Idiosyncrasy Not a Defense.—Before the incident that gave rise to this suit, the plaintiff's hair was black, except for a streak of gray running from front to rear, near the middle of her head. When the incident occurred she was 34 years old and the disfiguring streak had been present since she was very young. To conceal it she had used henna ever since she was 19 years old, except on one occasion. Then, about ten years before the events of this case, she consulted a hair dresser and he put a hair dye of some sort on the discolored area. As a consequence, her scalp "broke out" and she suffered intense itching and was confined to her home for several days. Now, in the hope of finding a method of relief from her disfigurement less time consuming than the henna process, she sought advice at the defendant's beauty shop, in St. Louis. When she sought such advice she explained to the operator to whom she was referred the difficulty she had experienced when she had been treated by a hair dresser before. Then, on advice of the operator and on her assurance that the proposed treatment would be perfectly harmless, she submitted to treatment, and the defendant's operator applied a preparation known as "notox." Following this application practically all the plaintiff's hair fell out, she suffered certain local and general symptoms of an annoying and serious character, and the new hair that grew in was white. She then instituted this suit. From a judgment in her favor, the defendant appealed to the Supreme Court of Missouri, division 1.

The preparation applied to the plaintiff's scalp, "nótox," had been formerly known as "inecto." Two bottles were used in giving a treatment. One of these bottles, according to the testimony of a chemist, contained trihydroxybenzene, sodium carbonate, saponifiable oil, ethyl alcohol and water. The other contained hydrogen peroxide. Any poison that might be in the bottle first described, according to the chemist's testimony, "would be overcome by the mixing of the two" and "there should be no poison resulting from the application of the mixture to the skin." The manager of the defendant's beauty shop testified that she had known about 3,000 persons whose hair had been dyed with "notox" and that she had known of no one except the plaintiff who had suffered any bad effects as the result of such treatment. The instructions that accompanied the package of "notox" said that "Notox . . . is safe to use on all normal skins" but added: "Persons who are known to have a pronounced idiosyncrasy to skin or scalp diseases, or who have at the time, any scratch or abrasion to the scalp, should apply no form of hair coloring." The physician who attended the plaintiff when she was suffering from the results of the "notox" treatment testified that her whole body was affected, but particularly the upper part; that she suffered from an acute nephritis, with almost complete suppression of urine, and from cystitis; that her eyes and ears were swollen, the canals in her ears being practically closed; that she suffered from arthritis, practically all her joints being involved; that she suffered intense pain, requiring the use of opiates; that it had been necessary to place her on a diet, and that she would have to remain on a diet; and that her condition was "a hair dye poison," "the result of an infection, a poison." This witness thought that the plaintiff's condition "indicated permanency."

The defendant contended that the inflammation of the skin from which the plaintiff suffered was "a result of an idiosyncrasy which she possessed to substances contained in the dye; . . . that her injuries were not caused by anything in the dye that was inherently dangerous or poisonous, . . ." A medical witness testified, however, that "it could be determined by a simple test whether or not a person was susceptible to a given substance; example, 'take a piece of cotton and saturate it with the material and take another piece without anything on it and place the two pieces on adhesive tape and put them on the skin and leave it there for a few hours, and if the individual is sensitized to the material, there may appear a red spot where the material was applied.'"

In the law of negligence, said the Supreme Court, if a reasonable person can, by the use or exercise of ordinary care, foresee the probability of effect of a given cause, it is sufficient to fasten liability, because what one knows and what one should know are equivalent in law. The court quoted with approval from *Gerkin* v. *Brown & Sehler Co.*, 177 Mich. 45, 143 N. W. 48, 48 L. R. A. (N. S.) 224, based on injuries alleged to have resulted from the dyed fur collar of a coat:

> When the fact is once established and demonstrated by experience that a certain commodity apparently harmless contains concealed dangers, and when distributed to the public through the channels of trade and used for the purposes for which it was made and sold is sure to cause suffering to, and injure the health of, some innocent purchaser, even though the percentage of those injured be not large, a duty arises to and a responsibility rests upon the manufacturer and dealer with knowledge to the extent, at least, of warning the ignorant consumer or user of the existence of the hidden danger.

Neither on the basis of the defendant's contention discussed above nor on the basis of any of the defendant's other contentions could the Supreme Court find any ground for reversing the judgment in favor of the plaintiff. That judgment, for $9,500, was accordingly affirmed.—*Arnold v. May Department Stores Co. (Mo.), 85 S. W. (2d) 748.*

Dental Practice Acts: Corporate Practice of Dentistry Illegal in Illinois; Statutory Restrictions on Advertising Upheld.—Winberry, a licensed dentist, filed a bill in the superior court, Cook County, Ill., to enjoin certain officials from enforcing the Illinois dental practice act, and New System Dentists, a corporation, intervened in the proceedings. The trial court dismissed the bill and both the plaintiff and the intervener appealed to the Supreme Court of Illinois. Meanwhile, Russel A. Trovillion, doing business under the firm name of New System Dentists, had filed a similar bill in the city court of East St. Louis, Ill. That court issued a temporary injunction against the enforcement of the act and the defendants likewise appealed to the Supreme Court of Illinois. The Supreme Court rendered a single opinion with respect to the two appeals.

The Illinois dental practice act imposes certain restrictions on advertising in connection with the practice of dentistry. Among other things, it makes it unlawful to claim superiority over neighboring dentists, to advertise free dental services or examinations, or to advertise any amount as a price or a fee. It regulates the type of professional cards that may be used and the size of the name plate that may be displayed on the premises of a dental office. The various complainants challenged the constitutionality of these restrictions, contending that they have no real or substantial relation to the public health. The practice of professions, said the Supreme Court, has generally been held to be subject to licensing and to regulation under the police power. Professions are not subject to commercialization or exploitation. In holding that the advertising restrictions contained in the act relate directly to public health and are well calculated to protect it, the court quoted extensively from *Semler* v. *Oregon State Board of Dental Examiners*, 55 S. Ct. 570 (abstr. THE JOURNAL, June 1, 1935, p. 2025), in which the Supreme Court of the United States upheld the validity of similar restrictions in the Oregon dental practice act.

The corporate intervener, the New System Dentists, further contended that another section of the dental practice act, which prohibits corporations from practicing dentistry, was invalid. The New System Dentists, according to the evidence, had made substantial investments in leases, office equipment, electric signs, instruments, advertising and advertising contracts prior to the enactment of the section prohibiting the corporate practice of dentistry and claimed that the enforcement of the prohibition would deprive the corporation of its property without due process of law. The corporation further contended that there is nothing detrimental to the public health in the corporate ownership of a dental office so long as all services are performed by licensed dentists. The law, answered the Supreme Court, is well settled that the state may deny to corporations the right

to practice professions and may insist on the personal obligation of individual practitioners. And this holding has been made regardless of any existing contracts and investments made and entered into by corporations. The act is not to be deemed discriminatory, continued the court, because it denies to corporations the right to operate dental offices and fails to prohibit corporations from operating medical institutes and clinics, drug stores and similar professional establishments. The legislature was not compelled to treat alike all those classes and was not bound to strike at all evils at the same time, in the same act, or in the same way. It may deal with the different professions according to the needs of society in relation to each profession.

Accordingly, the Supreme Court held that the challenged provisions of the Illinois dental practice act were valid. It ordered that both bills for injunctions to restrain the enforcement of the dental practice act should be dismissed.—*Winberry v. Hallihan (New System Dentists, Intervener); Trovillion v. Hallihan (Ill.), 197 N. E. 552.*

Workmen's Compensation Acts: Silicosis; Period Within Which Claim for Compensation Must be Filed.—The workman's employment subjected him to the dust of burnt clay and other vitrified products disseminated by machines used in the manufacture of china, and to silica dust raised by sweeping. In 1927, after several years of employment, he developed a cough. He became chronically tired and weak. The employer discontinued business in November 1933, but at that time the workman did not consider his condition serious enough to require medical attention. The following February a physician diagnosed the workman's condition as due to a slight temporary inflammation of the lungs. In March, when he was treated for injuries sustained in an automobile accident, the physician discovered a tuberculous condition. In May, following roentgen examinations, his condition was diagnosed as pulmonary tuberculosis activated by silicosis. Attributing the silicosis to his former employment, he instituted proceedings for compensation under the California workmen's compensation act. The industrial accident commission dismissed his claim on the grounds that it had not been filed within six months after the date of the injury, as required by the workmen's compensation act. The worker then appealed to the district court of appeal, second district, division 2, California.

In cases of the character under consideration, said the district court of appeal, the date of injury, in computing the limitation period set forth in the workmen's compensation act, is not the date of any particular exposure to the hazards of the employment but "the time when the accumulated effects culminate in a disability traceable to the latent disease as the primary cause, and by the exercise of reasonable care and diligence it is discoverable and apparent that a compensable injury was sustained in performance of the duties of the employment." *Marsh* v. *Industrial Accident Commission,* 217 Calif. 338, 18 P. (2d) 933. In the case cited, the court disapproved the holding of the commission that the statute of limitations began to run as of the date the employee first was disabled and indicated that the running of the prescription period began when the presence of silicosis was or should have been diagnosed as the primary and efficient cause of the injury. It appears quite obvious, said the court in the present case, that the claimant, from the inception of his cough until he received the roentgen report in May 1934, had no reason to believe he was suffering from a compensable injury, silicosis, arising out of his employment. Even his visit to a physician in February 1934 disclosed nothing further than the given diagnosis of a slight inflammation of the lungs from which a speedy recovery was assured.

An employee, continued the district court of appeal, is not to be deprived of compensation because he incorrectly diagnoses his condition. The commission in this case found that the claimant should have discovered the character of his condition prior to the date of his final termination of work. Such a finding, concluded the district court of appeal, is without support in the evidence. It is wholly unreasonable to argue that the worker should, through the exercise of reasonable care and diligence, have known in November 1933 that which his medical adviser did not discover in February 1934. The court accordingly ordered that the award of the commission dismissing the claimant's claim be set aside and that the commission proceed with the determination of the claim.—*Price v. Industrial Accident Commission of California (Calif.), 49 P. (2d) 294.*

Society Proceedings

COMING MEETINGS

American Medical Association, Kansas City, Mo., May 11-15. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Academy of Pediatrics, Kansas City, Mo., May 11-12. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association for Thoracic Surgery, Rochester, Minn., May 4-6. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.

American Association of Anatomists, Durham, N. C., Apr. 9-11. Dr. George W. Corner, 260 Crittenden Boulevard, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Boston, Apr. 9-10. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., May 4. Dr. Edward J. G. Beardsley, 1919 Spruce St., Philadelphia, Secretary.

American Association on Mental Deficiency, St. Louis, May 1-4. Dr. Groves B. Smith, Beverly Farms, Godfrey, Ill., Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., May 4-5. Dr. Russell S. Boles, 1901 Walnut Street, Philadelphia, Secretary.

American Heart Association, Kansas City, Mo., May 12. Dr. H. M. Marvin, 50 West 50th St., New York, Acting Executive Secretary.

American Laryngological, Rhinological and Otological Society, Denver, May 18-20. Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester, N. Y., Acting Secretary.

American Orthopedic Association, Milwaukee, May 18-21. Dr. Ralph K. Ghormley, Mayo Clinic, Rochester, Minn., Secretary.

American Psychiatric Association, St. Louis, May 4-8. Dr. William C. Sandy, State Education Building, Harrisburg, Pa., Secretary.

American Radium Society, Kansas City, Mo., May 11-12. Dr. E. H. Skinner, 1103 Grand Ave., Kansas City, Mo., Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. J. M. Hayman Jr., Lakeside Hospital, Cleveland, Secretary.

American Surgical Association, Chicago, May 7-9. Dr. Vernon C. David, 59 East Madison Street, Chicago, Secretary.

American Therapeutic Society, Kansas City, Mo., May 8-9. Dr. Oscar B. Hunter, 1835 Eye St. N. W., Washington, D. C., Secretary.

American Urological Association, Boston, May 18-21. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arizona State Medical Association, Nogales, Apr. 23-25. Dr. D. F. Harbridge, 15 East Monroe Street, Phoenix, Secretary.

Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Association for the Study of Internal Secretions, Kansas City, Mo., May 11-12. Dr. E. Kost Shelton, 34 Micheltorena St., Santa Barbara, Calif., Secretary.

Association of American Physicians, Atlantic City, N. J., May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

Connecticut State Medical Society, Hartford, May 20-21. Dr. Charles W. Comfort Jr., 27 Elm Street, New Haven, Secretary.

District of Columbia, Medical Society of the, Washington, D. C., May 6. Dr. C. B. Conklin, 1718 M St. N. W., Washington, D. C., Secretary.

Florida Medical Association, S. S. *Florida,* Apr. 27-29. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.

Georgia, Medical Association of, Savannah, Apr. 21-24. Dr. Edgar D. Shanks, 478 Peachtree Street N.E., Atlanta, Secretary.

Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 202 Lahl Building, Monmouth, Secretary.

Iowa State Medical Society, Des Moines, Apr. 29-May 1. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.

Louisiana State Medical Society, Lake Charles, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-29. Dr. Walter Dent Wise, 1211 Cathedral St., Baltimore, Secretary.

Medical Women's National Association, Kansas City, Mo., May 10-12. Dr. Laila A. Coston-Conner, 333 East 68th St., New York, Secretary.

Minnesota State Medical Association, Rochester, May 3-6. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.

Mississippi State Medical Association, Greenville, May 5-7. Dr. T. M. Dye, McWilliams Building, Clarksdale, Secretary.

Missouri State Medical Association, Columbia, Apr. 13-15. Dr. E. J. Goodwin, 634 North Grand Blvd., St. Louis, Secretary.

National Tuberculosis Association, New Orleans, Apr. 22-25. Dr. Charles J. Hatfield, 7th and Lombard streets, Philadelphia, Secretary.

Nebraska State Medical Association, Lincoln, Apr. 7-9. Dr. R. B. Adams, 15 N Street, Lincoln, Secretary.

New Mexico Medical Society, Carlsbad, May 6-8. Dr. L. B. Cohenour, 219 West Central Ave., Albuquerque, Secretary.

New York, Medical Society of the State of, New York, Apr. 27-29. Dr. Daniel S. Dougherty, 2 East 103d St., New York, Secretary.

North Carolina, Medical Society of the State of, Asheville, May 4-6. Dr. L. B. McBrayer, Southern Pines, Secretary.

North Dakota State Medical Association, Jamestown, May 17-19. Dr. Albert W. Skelsey, 20½ Broadway, Fargo, Secretary.

Oklahoma State Medical Association, Enid, Apr. 6-8. Dr. L. S. Willour, 203 Ainsworth Building, McAlester, Secretary.

South Carolina Medical Association, Greenville, Apr. 21-23. Dr. E. A. Hines, Seneca, Secretary.

South Dakota State Medical Association, Sioux Falls, May 4-6. Dr. John F. D. Cook, Langford, Secretary.

Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church Street, Nashville, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

191: 153-304 (Feb.) 1936

Significance of Normal and Morbid Formation and Distribution of Cellular and Noncellular Constituents of Blood and Lymph. J. L. Yates, Milwaukee.—p. 153.

Hemolytic Anemia in Carcinomatosis of Bone Marrow. T. R. Waugh, Montreal.—p. 160.

Bacteriophage Service to Patients with Staphylococcic Septicemia. W. J. MacNeal and Frances C. Frisbee, New York.—p. 170.

One Hundred Patients with Staphylococcic Septicemia Receiving Bacteriophage Service. W. J. MacNeal and Frances C. Frisbee, New York.—p. 179.

Clinical and Electrocardiographic Picture of Coronary Occlusion Produced by Ruptured Aneurysm of Abdominal Aorta. A. H. Elliot and R. D. Evans, Santa Barbara, Calif.—p. 196.

Persistent Pain in Shoulder Region Following Myocardial Infarction. J. Edeiken and C. C. Wolferth, Philadelphia.—p. 201.

Acetyl-β-Methylcholin: IV. Further Studies of Its Action in Paroxysmal Tachycardia and in Certain Other Disturbances of Cardiac Rhythm. I. Starr Jr., Philadelphia.—p. 210.

*Lung Puncture in Lobar Pneumonia. S. W. Sappington and G. O. Favorite, Philadelphia.—p. 225.

*Association of Erythremia and Duodenal Ulcer. M. Kraemer and M. Asher, Newark, N. J.—p. 234.

Amebiasis and Cancer of Colon. A. C. Reed and H. H. Anderson, San Francisco.—p. 237.

Producton of Nephritis in Dogs by Roentgen Rays. I. H. Page, New York.—p. 251.

*Creatinuria in Adult Males. F. H. L. Taylor and W. B. Chew, Boston. —p. 256.

Filtrable Calcium of Blood Serum: I. Comparison of Filtrable Calcium of Serum and Total Calcium of Cerebrospinal Fluid in Normal, Hyperparathyroid and Hypoparathyroid States. R. Gregory and Marie Andersch, Iowa City.—p. 263.

Causes of Death in Diphtheria and Their Prevention. A. L. Hoyne, Chicago.—p. 271.

Lung Puncture in Lobar Pneumonia. — Sappington and Favorite performed diagnostic lung puncture in sixty cases of lobar pneumonia (fifty-seven pneumococcic and three streptococcic). Positive cultures, suitable for typing, were obtained in 90 per cent, half of these within six hours. Lung puncture cultures made three and twenty-four hours after the administration of antipneumococcus serum were positive. In twenty-five cases in which both the lung and sputum pneumococcus were typed, there was 100 per cent agreement. When sputum is at once available, therefore, lung puncture is unnecessary. In twenty-two of the cases, however, the sputum was either absent or unobtainable at the time the lung puncture was made. The method is therefore recommended for early diagnosis and typing when sputum is not as quickly available. In the technic detailed, the use of a single tube of blood agar with 1.5 cc. of plain broth at the bottom of the tube is so simple and adequate that the authors recommend it. The very rapid growth of the lung organisms in this small amount of broth with the few drops of lung blood or exudate allows early typing of the pneumococcus and usually the recognition of the type of streptococcus.

Association of Erythremia and Duodenal Ulcer. — Kraemer and Asher have recently observed two patients having associated erythremia and duodenal ulcer. Both patients were Russian Jews employed in tailoring establishments. The gastrointestinal complaint was predominant in both. The first patient presented nothing of unusual interest and is offered merely because it adds another case to those already reported of the association of the two diseases. The second patient was more cooperative. A series of lavages was attempted not only to relieve the ulcer symptoms but also in the hope that the erythremia might improve as it did in the case treated by Morris and his associates. When the patient was cured of his painful ulcer symptoms, and since he knew that his red blood cells were not being reduced, he was no longer content to continue the lavages. Treatment was discontinued in March 1934. A follow up in May 1934 revealed that the patient was still free from his ulcer symptoms and was receiving roentgen therapy for his erythremia. Apparently not all cases of erythremia are benefited by lavaging addisin from the stomach. The authors believe that it is possible that they did not carry out frequent enough washings. Should a patient with erythremia and duodenal ulcer show a marked reduction in the erythrocyte count after gastric lavage, gastrectomy might afford permanent cure of both disorders. This operation would remove the source of addisin and at the same time cure the ulcer.

Creatinuria in Adult Males. — Taylor and Chew found creatine in the urine of fifteen adult men in amounts varying between 0 and 196 mg. of creatine nitrogen in twenty-four hours. This amount of creatine was not materially changed by marked restriction of the protein intake. The authors present some data suggesting that unusual muscular activity or sudden change in muscular activity may result in an increase of the creatine excreted.

American Journal of Physiology, Baltimore

114: 515-726 (Feb. 1) 1936. Partial Index

Circulatory and Respiratory Disturbances of Acute Compressed Air Illness and Administration of Oxygen as Therapeutic Measure. A. R. Behnke, L. A. Shaw, Anne C. Messer, R. M. Thomson and E. P. Motley, Boston.—p. 526.

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American Review of Tuberculosis, New York

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Mechanics of Respiration. P. M. Andrus, London, Ont.—p. 139.

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*Hemorrhagic Pleurisy of Tuberculous Origin and Hemopneumothorax. E. Korol, Lincoln, Neb.—p. 185.

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Comparative Value of Artificial Pneumothorax and Induced Phrenic Paralysis in Treatment of Centrally Located, Isolated Pulmonary Tuberculous Cavities. P. Slavin, Glen Gardner, N. J.—p. 215.

Some Considerations on Results of Intrapleural Pneumolysis. P. Dufault and A. Laroche, Rutland, Mass.—p. 219.

Tuberculous Abscesses of Chest Wall as Complication of Pulmonary Tuberculosis: Report of Case. C. W. Twinam, Iowa City.—p. 228.

Lung Abscess and Tuberculosis. F. Murray, New York.—p. 236.

*Tuberculin-Positive Children Observed for Various Periods Up to Five Years: Study of One Thousand and Forty-Six Reactors. W. L. Weintraub, Paterson, N. J.—p. 247.

Tuberculin Testing with Purified Protein Derivative and Old Tuberculin. T. M. Palmer, L. S. Laffitte and J. A. White Jr., Jacksonville, Fla. —p. 259.

Spontaneous Hemopneumothorax.—In analyzing the cases reported in the literature and their own case, Jones and Gilbert were impressed by the great similarity between the etiology of idiopathic pneumothorax and hemopneumothorax. The factors

seem to be the same so far as the rupture of the lung and the escape of the air into the pleural cavity are concerned, whereas the accompanying hemorrhage can be explained only on the basis of chance. When an emphysematous bleb ruptures because of increased intrapulmonary or intrathoracic pressure or by external forces, the usual occurrence is the escape of air into the pleural cavity. If in the course of this rupture a blood vessel is torn in the wall of the bleb or in the attached pleural adhesion, the escape of air is accompanied by a hemorrhage, the amount of which is determined by the size of the involved vessel and also by the various intrathoracic reactions resulting from the outpouring of air and blood into the pleural cavity. The case reported by Palmer and Taft demonstrates the part which chance plays in causing either a pneumothorax or a hemopneumothorax. Treatment in cases of mild hemorrhage should be conservative, whereas patients suffering from larger hemorrhages should have the blood removed from the pleural cavity and air replaced. In some of the latter cases surgical methods may be used following the removal of blood. Prognosis in most cases is good but depends on the amount of the pleural hemorrhage.

Hemorrhagic Pleurisy of Tuberculous Origin and Hemopneumothorax. — Korol points out that the hypothesis that tuberculous hemorrhagic pleurisy is caused by bleeding intrapleural granulations is no longer tenable. Hemorrhagic pleurisy is not an inflammatory condition but a hemorrhage associated with a spontaneous pneumothorax. The pneumothorax occurs first and is caused by the rupture of an emphysematous vesicle. The hemorrhage happens if there are coexistent localized adhesions preventing the complete retraction of the lung; the weight of the noncollapsed lung may tug on the adhesion and tear it. The hemorrhage then takes place from the distal stump of the adhesion. In certain cases of artificial pneumothorax the hemorrhage may be produced by the tuberculous process spreading in all directions in the treated lung; there may occur an erosion of a large blood vessel and simultaneous perforation into the pneumothorax cavity. In hemorrhagic pleurisy, as in traumatic hemopneumothorax, there is the escape of all the hematologic elements from a severed blood vessel into the pleural cavity. The blood coagulates immediately before all the cells have become enmeshed. The pleural fluid contains numerous red cells but no fibrinogen and for that reason looks like blood but remains liquid on standing. In the cases of hemorrhagic pleurisy reported since 1900 the associated pneumothorax was generally recognized. Prior to the roentgen era the pneumothorax was often overlooked. The pleural adhesions and the partly functioning upper lobe produced bizarre physical conditions, rendering diagnosis difficult or impossible. However, in the majority of case reports containing detailed clinical or postmortem data the coexisting pneumothorax is strongly indicated.

Tuberculin-Positive Children Observed for Various Periods Up to Five Years.—During the last three months of 1934, which marked the close of a five-year period, Weintraub made a survey of the 1,041 clinic children who had been 15 years of age or less at the time they were found to show a positive tuberculin reaction to 1 mg. of old tuberculin. These children had roentgenograms taken at the time their tuberculin sensitivity was discovered and have been under observation for periods varying from six months to five years, with refilming in those cases in which it appeared most desirable after considering all existing circumstances, and in the end governed by the willingness of the patient to cooperate. The roentgenograms were read from the standpoint of showing the adult type of pulmonary tuberculosis or any evidences of the childhood type of tuberculosis. Physical examination of the chest was not found to be of any value in either the diagnosis or the follow up of children with childhood type lesions, since even the pneumonic parenchymal lesions of the primary type usually yielded no identifying physical signs. With the appearance of the adult type of involvement positive signs may be elicited, but even then as a rule only after considerable progression has occurred. The early lesions are found only by means of the roentgenogram and should be discovered before symptoms have appeared. The study comprised 508 males and 533 females. There were 542 contacts and 499 noncontacts. In the male group there were 254 contacts and 254 noncontacts, and in the female group 288 contacts and 245 noncontacts. There were 639 children who were under observation for periods of more than three years and only 224 who were observed for periods of less than two years. In the male group, 50 per cent were contacts; 26 per cent showed roentgen evidence of childhood type involvement alone, while 10.6 per cent of the noncontacts showed similar involvement. In the female group, 54 per cent were contacts; 24 per cent showed roentgen evidence of childhood type involvement alone, with similar conditions in 12 per cent of the noncontacts. With respect to childhood type lesions, as demonstrated roentgenologically by the usual procedure, there was no significant variation according to sex. With respect to adult type pulmonary tuberculosis an entirely different picture is presented. Six cases were found in the final roentgen examination of these 1,041 children; however, during the course of the study previous to the final survey, five children had been found who had developed the adult type of disease as shown by the roentgenogram, after they had previously been under observation and yielded a positive tuberculin test and a roentgenogram negative for the adult type of pulmonary tuberculosis.

Anatomical Record, Philadelphia

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Vaginal Smears of Rats as Influenced by Frequent Examinations. F. E. Emery and E. L. Schwabe, Buffalo.—p. 147.
Preparation of Multicolored Corrosion Specimens. J. K. Narat, J. A. Loef and Mitzi Narat, Chicago.—p. 155.
Hair Growth on Skin Transplants in Immature Albino Rat. E. O. Butcher, New York.—p. 161.
Tensile Strength of Human Tendons. A. E. Cronkite, Stanford University, Calif.—p. 173.
Development of Cochlea in Gecko, with Especial Reference to Cochlea-Lagena Ratio and Its Bearing on Vocality and Social Behavior. L. T. Evans, Boston.—p. 187.
Influence of Thyroidectomy on Effectiveness of Gonad Stimulating Hormones. S. L. Leonard and I. B. Hansen, New York.—p. 203.
Effect on Chick of Some Gonadotropic Hormones. W. R. Breneman, Madison, Wis.—p. 211.
Studies on Uterine Growth: III. Local Factor in Rabbit Uterus. J. E. Markee, W. M. Wells and J. C. Hinsey, Palo Alto, Calif.—p. 221.
Uterine Bleeding in Spinal Monkeys. J. E. Markee, J. H. Davis and J. C. Hinsey, Palo Alto, Calif.—p. 231.
Growth of Intra-Ocular Endometrial Transplants in Spinal Rabbits. J. E. Markee, R. A. Pasqualetti and J. C. Hinsey, Palo Alto, Calif.—p. 247.
Excretion of Theelin in Urine of Guinea-Pigs with Irradiated Ovaries. Ida Genther Schmidt, Cincinnati.—p. 255.
Micromelia of Chicken Embryos and Newly Hatched Chicks Caused by Nutritional Deficiency. W. Landauer, Storrs, Conn.—p. 267.

Annals of Surgery, Philadelphia

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*Bilateral Trigeminal Tic: Its Association with Heredity and Disseminated Sclerosis. W. Harris, London, England.—p. 161.
Penetrating Wounds of the Brain: Experimental Study. C. Pilcher, Nashville, Tenn.—p. 173.
Pulsating Tumors of Sternum: Report of Four Cases. G. Crile Jr., Cleveland.—p. 199.
Cholangiography: Visualization of Gallbladder and Bile Ducts During and After Operation. N. F. Hicken, R. R. Best and H. B. Hunt, Omaha.—p. 210.
Diverticulosis of Small Intestine. H. C. Edwards, London, England.—p. 230.
Problem of Low Sigmoid Growth. F. W. Rankin, Lexington, Ky., and A. S. Graham, Richmond, Va.—p. 255.
Carcinoma of Linitis Plastica Type Involving Intestine. C. F. Dixon and G. A. Stevens, Rochester, Minn.—p. 263.
Acute Regional Ileitis. J. G. Probstein and G. E. Gruenfeld, St. Louis.—p. 273.
*Unusual Inflammatory Lesions of Ileocecal Region. J. H. Powers, Cooperstown, N. Y.—p. 279.
Primary Carcinoma of Fallopian Tubes: Report of Two Cases. H. Charache, Brooklyn.—p. 290.
Fractures of Humerus: Analysis of Treatment and Results of Two Hundred Fractures. M. C. O'Shea, New York.—p. 297.
Osteitis Pubis Following Suprapubic Prostatectomy. J. A. Lazarus, New York.—p. 310.

Bilateral Trigeminal Tic.—Harris has records of forty-one cases of chronic spastic paraplegia complicated by trigeminal tic. In seven there was bilateral trigeminal tic. Very rarely did the neuralgia commence before organic signs of spinal cord disease appeared. In addition to these, in one family the father had trigeminal tic and his daughter developed typical disseminated sclerosis, and in another family the mother had neuralgia and her son developed disseminated sclerosis. In another, the aunt was treated for typical bilateral tic and her

niece for trigeminal tic complicating disseminated sclerosis. The author has seen in many instances familial heredity of typical trigeminal tic; in one family no less than nine members appeared to have suffered from it.

Unusual Inflammatory Lesions of Ileocecal Region.—Powers calls attention, by the use of three clinical reports, to the interrelationship of inflammatory lesions of the terminal ileum, appendix, cecum and ileocecal lymph nodes. The first patient had diffuse inflammation of the terminal ileum, appendix and cecum and secondary involvement of the ileocolic nodes in the mesentery; in the second case the tip of an inflamed appendix was adherent to a mass of enlarged mesenteric nodes; the third case was one of primary typhlitis with localized, ulcerative, inflammatory changes in the wall of the cecum. Regional ileitis, acute nonspecific inflammation of the cecum and mesenteric lymphadenitis in the ileocolic angle are discussed. In view of (1) the similarity between the lymphatic apparatus of the appendix and terminal ileum, (2) the frequency of mesenteric adenitis as an accompaniment of regional ileitis and (3) the lack of interest in the ileocolic nodes in the presence of obvious appendicitis, it is quite possible that these nodes are involved more frequently than is generally suspected. The author believes that the prompt subsidence of symptoms following appendicectomy in Wilensky's early cases, in the cases reported by Rockey and in his first two cases, and the anatomic relationship of the lymphatic channels of the appendix to the ileocecal lymph nodes suggest that the appendix does play some part in the etiology of this form of glandular inflammation.

Archives of Neurology and Psychiatry, Chicago

35: 215-438 (Feb.) 1936

*Further Observations on Tumor of Pineal Body. G. Horrax, Boston.—p. 215.
Amyotrophic Lateral Sclerosis with Involvement of Posterior Column and Sensory Disturbances: Clinicopathologic Study. C. Davison and I. S. Wechsler, New York.—p. 229.
Encephalographic Studies in Cases of Extrapyramidal Disease. S. P. Goodhart, B. H. Balser and I. Bieber, New York.—p. 240.
*Electromyographic Study of Myotonia. D. B. Lindsley and E. C. Curnen, Boston.—p. 253.
Differential Diagnostic Types of Suicide. G. Zilboorg, New York.—p. 270.
Relationship Between Pressure in Veins on Nerve Head and Cerebrospinal Fluid Pressure. F. A. Gibbs, Boston.—p. 292.
Cerebrospinal Hydrodynamics: VII. Effects of Intravenous Injection of Hypertonic Solutions of Dextrose. J. H. Masserman, Chicago.—p. 296.
*Peripheral Venous Blood Pressure in Schizophrenic and in Normal Subjects. C. M. Krinsky, Newark, N. J., and J. S. Gottlieb, Worcester, Mass.—p. 304.
Unilateral Traumatic Selective Degeneration of Pallidum and Striatum. W. G. Spiller, Philadelphia.—p. 310.
Epileptiform Attacks in Cases of Glioma of Cerebral Hemispheres: Relation to Location and Histologic Type of Glioma. C. F. List, Ann Arbor, Mich.—p. 323.

Further Observations on Tumor of Pineal Body.—Horrax adds two cases of tumor of the pineal body to the literature. In one, in an adult, the growth was partially removed and verified at operation. Subsequent to operation and roentgen therapy the patient had remained well and in active life for one and one-half years, with no return of symptoms of intracranial disturbance. In the second case, in a boy 10 years of age, the tumor was verified only by ventriculography. The child presented the typical syndrome of Pellizzi: macrogenitosomia praecox. This patient also had had a period of normal activity for a year following decompression and roentgen therapy. After roentgen therapy he became more normally youthful in appearance. This is at least suggestive of some possible function of the pineal body concerned with the regulation of secondary sex characteristics.

Electromyographic Study of Myotonia.—Lindsley and Curnen describe a case of congenital myotonia and a case of myotonic dystrophy. The myotonia, which appeared to be the same in the two cases, was studied electromyographically. The after-contraction of myotonic muscles, which persists after the cessation of voluntary effort or brief mechanical stimulation, is accompanied by action currents. This indicates that the phenomenon is neurogenic rather than myogenic. The evidence presented favors the hypothesis that the after-contraction of myotonia is of reflex origin and is due to the persistent discharge of hyperexcitable sensory end organs in the muscle. Injections of ergotamine tartrate, pilocarpine hydrochloride and epinephrine hydrochloride have proved ineffective in relieving the myotonic condition, although calcium gluconate and calcium chloride have significantly reduced the amount and duration of the after-contraction.

Peripheral Venous Blood Pressure in Schizophrenic and in Normal Subjects.—Krinsky and Gottlieb obtained venous blood pressure values by the direct method under basal as well as nonbasal conditions for fifty schizophrenic patients and twenty-five normal subjects. The mean pressure for patients and normal controls under both basal and nonbasal conditions was 11 cm. of blood. The mean individual variation of the peripheral venous pressure was less in schizophrenic patients than in normal subjects. Under basal conditions the schizophrenic patient showed an average standard deviation of 0.83 cm., while the normal control showed an average standard deviation of 1.45 cm. Under nonbasal conditions the values were 0.92 and 1.94 cm. respectively. The peripheral venous pressure did not vary in accordance with the arterial blood pressure. No significant relationship was indicated between the degree of peripheral cyanosis and the level of the venous blood pressure.

Archives of Ophthalmology, Chicago

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Syndrome of Meningeal Fibroblastoma Arising from Lesser Wing of Sphenoid Bone. R. A. Groff, Philadelphia.—p. 163.
The Royal London Ophthalmic Hospital: Visit to King George V Extension. B. Samuels, New York.—p. 185.
Pupillary Reactions in Combined Lesions of Posterior Commissure and of Pupillodilator Tracts: Contribution to Pathogenesis of Argyll Robertson Pupil. N. P. Scala, Washington, D. C., and E. A. Spiegel, Philadelphia.—p. 195.
Biochemistry of Lens: VI. Mineral Metabolism in Normal and in Cataractous Lens. J. E. Lebensohn, Chicago.—p. 217.
Hereditary Cataract of Senile and Presenile Types. F. Vinsonhaler and K. W. Cosgrove, Little Rock, Ark.—p. 222.
Herpes Corneae, with Especial Reference to Its Treatment with Strong Solution of Iodine. T. Gundersen, Boston.—p. 225.
*Rôle of Malaria in Control of Atrophy of Optic Nerve Due to Syphilis: Study of Twelve Cases. C. P. Clark, Indianapolis.—p. 250.
Epithelial Downgrowth into Anterior Chamber Following Cataract Extraction: Arrest by Radium Treatment. D. Vail, Cincinnati.—p. 270.
Diagnosis and Treatment of Anisophoria. J. S. Friedenwald, Baltimore.—p. 283.

Malaria in Control of Atrophy of Optic Nerve.—Clark reports twelve cases in each of which syphilis of the central nervous system was present with syphilitic invasion of the optic nerve and visual pathways. There were eight patients with tabes and two each with dementia paralytica and dementia paralytica of the tabetic form. The condition of eight patients improved under therapy. One of the eight patients was treated by injection of typhoid vaccine intravenously because she was resistant to the strain of the organism of tertian malaria used; the other seven were treated with induced malaria. There was no improvement in four of the patients, and the ocular condition continued to progress until blindness resulted. This was to be expected owing to the advanced state of atrophy of the optic nerve that was present before treatment with malaria was started. The state of the pupils was unchanged in all twelve patients. If invasion of the optic nerves and visual pathways has taken place, it is prudent to treat the patient as early as possible with malaria. Malaria does not possess magic power to restore function to an optic nerve with advanced atrophy of the tissue, but induced early it enables the natural barriers to syphilis to be established before vital tissue has lost its function. The optic nerves, chiasma and optic tracts are involved by the same meningeal infiltration that is largely responsible for the damage of syphilis to other structures. When this infiltration is arrested before maximal damage has occurred, the decline of vision is halted and the patient is saved from blindness. Additional factors probably play a minor part in the defense developed against the spirochete after malaria: vasodilatation and increased metabolism. For some patients there is a mild hyperemia of the optic disks during the paroxysm of malaria. The factors of fever, vasodilatation, increased body metabolism and stimulation of the reticulo-endothelial system appear to be the means by which malaria and other acute febrile diseases offer to the body an effective defense against syphilis of the central nervous system.

Archives of Surgery, Chicago

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*Experimental Encephalography with Anesthetic Gases. R. B. Aird, San Francisco.—p. 193.
Surgical Technic of Total Pneumonectomy. W. F. Rienhoff Jr., Baltimore.—p. 218.
Pathologic and Biochemical Changes in Skeletal Dystrophies: Analysis of Results of Treatment of Parathyroid Osteosis. E. L. Compere, Chicago.—p. 232.
*Posttraumatic Acute Bone Atrophy: Clinical Entity. F. B. Gurd, Montreal.—p. 273.
Early Asymptomatic Acoustic Tumor: Report of Six Cases. Mary Hardy and S. J. Crowe, Baltimore.—p. 292.
*Surgical Treatment of Chronic Ulcerative Colitis, with Especial Reference to Appendicostomy or Cecostomy Tube Irrigation. C. A. Kunath, Iowa City.—p. 302.
Dupuytren's Contracture. H. W. Meyerding, Rochester, Minn.—p. 320.
Effects of Constriction and Release of an Extremity: Experimental Study of Tourniquet. H. Wilson and N. W. Roome, Chicago.—p. 334.
Present Status of Iodine in Treatment of Exophthalmic Goiter. J. L. De Courcy, Cincinnati.—p. 346.
Fifty-Ninth Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts, J. S. Barr and R. J. Joplin, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland.—p. 355.

Experimental Encephalography with Anesthetic Gases.—It occurred to Aird that an anesthetic gas might qualify as the desired agent in encephalography. Since only a limited amount of gas can be injected and since this is relatively inert except as absorbed, it seemed conceivable that even strong anesthetic gases might prove safe, any sedative or narcotic effect being the result of its absorption and concentration in the central nervous system. Also the local effect of such a gas on the nerve tissues with which it was in direct contact might be to deaden them and abolish noxious reflexes, in contrast to the effect of ordinary gases. The duration of its presence would depend on such factors as its rate of diffusion and solubility in the spinal fluid and in the lipoids. The investigation of such a possibility seemed worth while. A state of light anesthesia induced by sodium amytal finally proved satisfactory. The dose necessary varied with the animal, but amounts from 22 to 32 mg. per kilogram of body weight were found satisfactory. With such doses the animal was quiet, good roentgenograms could be obtained easily, the injection of procaine hydrochloride and puncture of the meninges aroused the animal only briefly, and yet reflexes, muscle tension and often a fair degree of consciousness remained, so that superimposed irritative or narcotic effects of the injected gases usually could be determined readily. The usual routine of encephalography was as follows: After the intravenous administration of sodium amytal and the making of an initial plate of the skull as a control, the dog was strapped on its side to the table, and with aseptic technic and with local anesthesia a lumbar puncture was performed. The table was elevated, and intermittently between collections of spinal fluid the gas to be tested was injected slowly, by means of a syringe, into the subarachnoid spaces. Rotation of the head aided drainage. A three-way petcock attached to the injecting syringe and connected by tubing to the controlling valve of the gas tank afforded a simple and convenient closed system for handling the gases. Replacement of the spinal fluid by gas was carried as far as possible, usually until bubbles returned through the needle. Then the needle was withdrawn, and another lateral roentgen view of the skull was made. If the ventricular outline appeared, other views were taken to follow the course of the injection. Throughout the entire procedure, pulse, respiration, color, reflexes and muscle tension were observed closely and recorded. With improvements in technic, standardization of routine and experience, this method proved satisfactory for determining the following information on the various anesthetic gases: (1) ease of handling; (2) early irritative effect; (3) sedative or narcotic effect; (4) after-effects, both immediate and late; (5) safety, and (6) roentgen results, including the time of absorption. Ethyl chloride, divinyl chloride, ether, vinyl chloride and acetylene proved unsatisfactory for encephalographic use, the first three being decidedly dangerous. In limited series the effects of oxygen and those of cyclopropane appeared to be comparable to each other and definitely superior to those of air. Because of their safety, good roentgenographic results, minimal irritation, definite sedative effect and lack of ill effects, either clinically or pathologically, nitrous oxide and ethylene seem ideal agents for encephalography.

Posttraumatic Acute Bone Atrophy.—According to Gurd, the results of treatment appear to prove that the process of acute bone atrophy is reversible; the length of time required to bring about clinical cure is likely to be prolonged for from six months to an even longer period. With reference to treatment, the most important memorandum is that pain should be avoided and, more particularly, that anything in the nature of forcible manipulation, either with or without an anesthetic, should be excluded. In the case of the upper extremity, if further insult to the tissues is avoided the course is toward repair. The patient should be warned that no painful movements of any sort should be undertaken. Both snugly fitting unpadded plaster casts and physical therapeutic measures may be employed, especially diathermy with hot bathing at home. The latter procedure, as a rule, pleases the patient better and also is followed by rather better results. In the case of the lower extremity, the unpadded walking plaster cast, which is applied after absolutely all interstitial edema has been disposed of and to which a felt heel has been added, is the method of choice. If care is applied to remodel the foot, particularly with reference to overcoming pronation and flattening of both arches and if the patient walks sufficiently, the results are satisfactory. Sympathectomy as recommended by Fontaine and Herrmann has been carried out in one case. The result was not favorable, but the evidence which these authors supply cannot be ignored.

Surgical Treatment of Chronic Ulcerative Colitis.—During the last four years Kunath treated eighteen patients for chronic ulcerative colitis by the establishment of an appendicostomy or a cecostomy, with subsequent irrigation of the diseased intestine through a tube. A series of thirty-five cases of chronic ulcerative colitis has been surveyed to evaluate, if possible, the relative merits of the various operative procedures used. He has found appendicostomy and cecostomy with subsequent irrigation of the diseased intestine a useful procedure in selected cases. The study emphasizes the limitations of all forms of surgical treatment and the apparent futility of expecting cures from any procedure less than colectomy. The author feels that any blanket form of therapy, i. e., one operative procedure used on all types of patients as they come, cannot give the best results. By carefully analyzing each case, by using certain procedures only in selected cases and by remembering certain limitations of each type of operation the present results can be improved to an appreciable degree. A simple classification of cases has been suggested, which may point the way toward more intelligent treatment. This outline of treatment represents only a transient opinion rather than a permanent policy. There is no ideal method of treatment, and one is usually faced with the problem of choosing the least vicious of several evils. However, surgery has something definite to offer these patients, and the problem involves the choosing from a number of procedures at one's disposal the one most suited to each case.

Canadian Medical Association Journal, Montreal

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Silicon and Dust Deposits in Tissues of Persons Without Occupational Exposure to Siliceous Dusts. T. H. Belt, D. Irwin and E. J. King, Toronto.—p. 125.
*Clinical Experiences with Wheat Germ Oil (Vitamin E). E. M. Watson, London, Ont.—p. 134.
Vegetable Insulinoides and Their Therapeutic Indications. H. Labbé, Paris, France.—p. 141.
Congenital Familial Clubbing of Fingers and Toes. F. L. Horsfall Jr., Montreal.—p. 145.
Rhinoscleroma: Report of Case. P. E. Ireland, Toronto.—p. 149.
Importance of Early Diagnosis in Mycotic Diseases, with Especial Reference to Blastomycosis: Brief Report of Two Cases. Pauline Beregoff-Gillow, Montreal.—p. 152.
*Hemoglobin of Normal Children and Certain Factors Influencing Its Formation. J. R. Ross and Pearl Summerfeldt, Toronto.—p. 155.
*Postanesthetic Leukocytosis. E. M. Boyd, Kingston, Ont.—p. 159.
Influenzal Meningitis Treated with Anti-Influenza Bacillus Serum. G. E. White, Windsor, Ont.—p. 163.
Fat Embolism. R. J. Harris, Toronto.—p. 166.
The Anorectum in Chronic Constipation. E. A. Daniels, Montreal.—p. 169.
Lumbago and Sciatica. S. A. Wallace, Kamloops, B. C.—p. 174.
Acute Septic Arthritis. G. W. Armstrong, Ottawa, Ont.—p. 177.
Fractures of the Carpal Scaphoid. D. W. G. Murray, Toronto.—p. 180.
Some Observations on Short Wave Therapy. R. B. Taylor, Montreal.—p. 183.

Clinical Experiences with Wheat Germ Oil (Vitamin E).—Watson prescribed wheat germ oil to sixty-five patients respecting whom spontaneous abortions, threatened

abortions or involuntary sterility constituted the principal abnormalities. The patients have been classified into four groups: group 1, pregnant women who had experienced two or more spontaneous abortions previous to receiving wheat germ oil treatment (habitual abortion); group 2, pregnant women who had experienced one spontaneous abortion previous to receiving wheat germ oil treatment; group 3, cases of threatened abortion, and group 4, women who sought medical advice because of failure to become pregnant (sterility group). The patients included in groups 1 and 2, with but two exceptions, were pregnant at the time the treatment with wheat germ oil was started. The purpose of the treatment was to favor the continuation of the pregnancies. The patients in group 3 received the oil only after the onset of the symptoms of theatened abortion, and its administration was a part of the treatment for that condition. Those in group 4 were not pregnant at the time the oil was used, although several had been pregnant previously. The object of the treatment in these cases was to facilitate impregnation. In the majority of the abortion and sterility cases no therapeutic measures except the use of wheat germ oil were instituted. But the patients with signs of threatened abortion were subjected to the usual management for that condition and received wheat germ oil. Of eleven patients who had sustained from three to fifteen spontaneous abortions prior to the exhibition of wheat germ oil, nine went to term and were delivered of healthy living children. Six of the patients under this regimen completed a pregnancy for the first time. Of the seventeen wheat germ oil treated patients, each of whom had had two spontaneous abortions, twelve gave birth to healthy living children after the use of the oil. In five cases the pregnancies were interrupted by spontaneously occurring abortions. Of nine treated patients, each of whom had experienced one previous spontaneous abortion, eight gave birth to healthy, living children. In the ninth one abortion took place a short time after the use of the oil was commenced. Fifteen patients were treated for the symptoms of threatened abortion, the majority after bleeding had begun. In eleven of these the pregnancies continued uninterruptedly to terminate in natural deliveries, but in four instances the abortions became inevitable. Thirteen nonpregnant women were given wheat germ oil with a view to facilitating impregnation. Six of these had never conceived and therefore constituted examples of primary sterility. Each of the remainder had been pregnant at least once, which placed them in the category of so-called secondary sterility. Seven had had one or more abortions, but only one woman had given birth to a living child. Pregnancy did not ensue in any of the patients in this group. Conception occurred in two of Vogt-Möller's four sterility cases and living babies were delivered. The experiments lend some support to the surmise that vitamin E is a factor in the advancement of pregnancy to a natural termination.

Hemoglobin of Normal Children and Certain Factors Influencing Its Formation.—Ross and Summerfeldt determined the hemoglobin content of four groups of normal children by the Newcomer method. The first group consisted of seventy-seven boys from 11 to 14 years of age from business and professional homes, who were day pupils attending a private school. In the second group there were 151 boys and girls from 5 to 14 years of age. These children were from average homes of the working class. The third group comprised thirty boys from 10 to 14 years of age who were living in an institution in the city, and the fourth group consisted of seventy-two boys and girls from 5 to 14 years of age who were living in an orphanage in the country. It was found that the hemoglobin content of the blood of normal children is lower than the accepted adult standards and varies with the age and economic status of the child. The addition of an iron free and copper free vitamin B complex concentrate to a diet considered adequate according to the present dietary standards resulted in a moderate increase in the hemoglobin content of the blood of normal children. The substitution of a cereal mixture rich in iron and copper, containing vitamin B complex for the ordinary cereals contained in a diet considered adequate according to the present dietary standards, resulted in a marked increase in the hemoglobin content of the blood of normal children. A further increase in the iron content of this special cereal mixture, bringing the children's daily intake of iron to 36 mg., produced a still further increase in the hemoglobin content of the blood. The optimal iron intake for hemoglobin formation in normal children is greater than the present accepted standards.

Postanesthetic Leukocytosis.—Boyd ascertained the lipid composition of the white blood cells immediately before and again at an interval of from one-half to twenty hours after anesthesia in a group of noninfected patients submitted to various surgical procedures involving a relatively small loss of blood. The type of operation was not found to affect the results. The anesthetic was ether following induction by chloroform or nitrous oxide. Morphine and atropine were given before operation. The white cells were separated from samples of about 50 cc. of blood, ground with cleaned sand and extracted with alcohol-ether. The resulting extracts were analyzed by the Bloor oxidative micro methods as modified by Boyd. It was found that the phospholipid content of blood leukocytes was lowered by anesthesia, the most marked decrease occurring after the third hour after operation. The percentage of free cholesterol exhibited minor inconstant changes. When the concentration of neutral fat was high before operation it became lowered after, and, conversely, when low before it became increased after anesthesia. The changes for cholesterol esters were similar to those for neutral fat, the direction of the effect of anesthesia depending on the initial concentration of this lipid. From these studies it is concluded that the polymorphonuclear leukocytes mobilized into the circulating blood after anesthesia contain decreased amounts of phospholipid, about the same percentage of free cholesterol and a medium value for cholesterol esters and neutral fat, as compared with the leukocytes present before anesthesia. The leukocytosis of anesthesia, therefore, differs chemically from the leukocytosis of fever and infection. A review of the literature revealed that there is a species variation among animals in the effect of anesthesia on the white cell count.

Delaware State Medical Journal, Wilmington

8: 1-16 (Jan.) 1936

Pathogenesis of Idiopathic Ulcerative Colitis: Impressions Gained from Review of One Hundred Cases. H. L. Bockus, Philadelphia.—p. 1.
Eating to the Best Advantage in Migraine. E. Podolsky, Brooklyn.—p. 10.

Florida Medical Association Journal, Jacksonville

22: 285-334 (Jan.) 1936

Infections and Treatment of Cervix Uteri. W. C. Payne, Pensacola.—p. 299.
Diagnosis of Brain Tumor. J. G. Lyerly, Jacksonville.—p. 303.
Prostatism: Determining Factors in Its Management, with Especial Reference to Prostatic Resorption. M. Stern, Daytona Beach.—p. 306.
The Importance of Vital Statistics to the Citizen. H. L. Dunn, Washington.—p. 309.

Illinois Medical Journal, Chicago

69: 101-192 (Feb.) 1936

Diagnosis and Treatment of Tertiary Skin Syphilis. B. B. Beeson, Chicago.—p. 120.
Congenital Dysfunction of Salivary Glands, with Observations on Physiology of Thirst. V. T. Austin and F. R. Steggerda, Urbana.—p. 124.
Survey of Present Status of Electrocoagulation of Tonsils. L. Savitt, Chicago.—p. 127.
Surgical Management of Ozena. S. M. Morwitz, Chicago.—p. 130.
Importance and Limitations of Roentgen Diagnosis of Pulmonary Lesions in Children. J. F. Carey, Joliet.—p. 135.
Intangibles in Diagnosis. D. C. Sutton, Chicago.—p. 139.
Vital Statistics as an Indicator of Accuracy of Diagnosis. G. H. Gowen, Chicago.—p. 142.
Artificially Induced Malaria as Public Health Hazard. H. J. Shaughnessy, Springfield.—p. 147.
Statistical Study of Coronary Disease: Review of Sixty-Seven Hundred and Fifty-Four Necropsies. J. D. Kirshbaum, Chicago.—p. 150.
Blood Grouping Tests in Medicolegal Determination of Nonpaternity. C. W. Muehlberger, Chicago.—p. 154.
Bronchoscopy in Lung Disease, with Especial Reference to Atelectasis. C. D. Sneller, Peoria.—p. 158.
Technic of Orchidopexy. J. S. Eisenstaedt, Chicago.—p. 161.
The General Practitioner. T. Kirkwood, Lawrenceville.—p. 165.
Carcinoid Tumor of Appendix: Report of Case. W. W. Ellwood, Chicago.—p. 171.
Quality of Medical Service. F. J. Jirka, Springfield.—p. 174.
Cavernous Hemangioma Radium Treatment. A. J. Larkin, Chicago.—p. 175.
Mental Picture of Surgical Clinics During the Past Fifty Years as Observed by an Internist—Retrospectively. J. Ritter, Miami, Fla.—p. 177.
Roentgen Treatment of Uterine Hemorrhage, Amenorrhea and Dysmenorrhea. I. S. Trostler, Chicago.—p. 180.
Three Cesarean Sections with Unusual Indications. W. W. Voigt, Chicago.—p. 184.

Journal Industrial Hygiene and Toxicology, Baltimore

18: 1-90 (Jan.) 1936

Relation Between Chemical Constitution and Pharmacologic Action of Phenylhydrazine Derivatives. W. F. von Oettingen and W. Deichmann-Gruebler, Wilmington, Del.—p. 1.

Pathologic Studies on Organic Effects of Various Hydrazine Derivatives. W. C. Hueper, Wilmington, Del.—p. 17.

Investigation of Morbific Properties of Ethyl Gasoline. G. Lind, Copenhagen, Denmark.—p. 37.

Appraisal of Lead Hazards Associated with Distribution and Use of Gasoline Containing Tetra-Ethyl Lead: II. Occupational Lead Exposure of Filling Station Attendants and Garage Mechanics. R. A. Kehoe, F. Thamann and J. Cholak, Cincinnati.—p. 42.

Urine Sulfate Determinations as a Measure of Benzene Exposure. W. P. Yant, H. H. Schrenk, R. R. Sayers, A. A. Horvath and W. H. Reinhart, Pittsburgh.—p. 69.

18: 91-138 (Feb.) 1936

Mineralogical Composition of Air-Borne Foundry Dust. T. Hatch and C. B. Moke, Boston.—p. 91.

Effect of Various Physical Factors on Counting of Silica Dust Suspended in Water. May Annetts and J. D. Leitch, Toronto.—p. 98.

Relative Toxicity of Acetone, Methyl Alcohol and Their Mixtures: I. R. M. Sklianskaya, F. Urieva and L. M. Mashbitz, Moscow, U. S. S. R.—p. 106.

Id.: II. Their Action on White Mice. L. M. Mashbitz, R. M. Sklianskaya and F. Urieva, Moscow, U. S. S. R.—p. 117.

Toxicity and Potential Dangers of Ethylene Glycol. F. H. Wiley, W. C. Hueper and W. F. von Oettingen, Wilmington, Del.—p. 123.

Spectrophotometric Method for Estimation of Ethylene Glycol Dinitrate. J. H. Foulger, Wilmington, Del.—p. 127.

Journal of Urology, Baltimore

35: 125-252 (Feb.) 1936

Renal Ptosis. S. R. Woodruff, Jersey City, N. J., and R. G. Scherer, Dubuque, Iowa.—p. 125.

Symptomatology, Renal Pathology and Treatment of Nephroptosis. J. C. Birdsall, Philadelphia.—p. 135.

Tuberculosis of Kidney in Pregnancy. W. S. Pugh, New York.—p. 160.

*Pyelitis and Ureteritis Cystica: Three Case Reports with Clinical Diagnosis. F. Hinman, C. M. Johnson and J. H. McCorkle, San Francisco.—p. 174.

Ectopic Ureter with Extravesical Orifice. J. L. Crenshaw and H. A. Buchtel, Rochester, Minn.—p. 190.

Bilateral Malignant Lesions of Upper Urinary Tract: Case Reports. H. S. Jeck, New York.—p. 206.

Study of Bladder Disturbances in Spina Bifida. O. R. Langworthy and J. E. Dees, Baltimore.—p. 213.

Pathology of Prostatic Hypertrophy. E. W. Hirsch, Chicago.—p. 227.

Primary Carcinoma of Female Urethra Treated by Complete Extirpation of Urethra. J. A. Lazarus and A. D. Schneider, New York.—p. 235.

*Some Observations on Female Urology, with Especial Reference to Ectopic Kidneys and Urethrography. W. E. Stevens, San Francisco.—p. 241.

Pyelitis and Cystic Ureteritis.—Hinman and his associates describe cases which show that cystic disease of the ureter and renal pelvis may be associated with ureteral obstruction and infection, calculi, carcinoma and bilharzial infestation, and possibly with the elimination of toxic substances through the urinary tract. The gross pathologic changes may be described briefly as cystic structures varying from microscopic to several centimeters, from spherical to ovoid, and from embedded to pedunculated. They vary from clear to whitish yellow, brown, gray, bluish or hemorrhagic. The contents may be thin and watery or thick, viscid and colloidal. As to pathogenesis, four hypotheses are advanced: (1) the occlusion of crypts in the mucous membrane, with retention of the secretions of its epithelium, (2) the pathologic blocking and secretion of glands already present in the urinary passages, (3) psorospermidial infestation and (4) the "cell nest" theory of von Brunn. Most of the evidence is in favor of von Brunn's theory. A chronic inflammation of the mucous membrane produces downward proliferation of the surface epithelium. These downgrowing buds become pinched off and form epithelial cell nests in the submucosa. These in turn proliferate, their centers degenerate and they push upward toward the lumen of the urinary tract as cystic structures. A history of chronic infection of the urinary tract associated with hematuria should suggest it, and cystic cystitis almost always is found by cystoscopy. The diagnosis is made by ureteropyelography. The pyelogram may show two types of filling defects, one of the pelvis, the other of the calices. The ureterogram shows a characteristic mottling, caused by nonopaque filling defects in the outline of the ureter. Other pathologic conditions that might be confused with this picture are those affecting the pelvis—early polycystic kidney and chronic pyelonephritis—and those affecting the ureter—nonopaque stones, blood clots, multiple papillomas or bubbles of air. The first step to be taken in the treatment of this condition is obviously the removal of the source or cause of the inflammatory process. The passage of large ureteral catheters and irrigation with silver nitrate solution, as suggested by Kindall and practiced by the authors with some measure of success, would seem to be the conservative course. The relief of obstruction, when present, is the first consideration. Pyelotomy, ureterotomy or even nephrectomy may be indicated when the disease is unilateral and advanced to the point of renal insufficiency which has not responded to conservative measures.

Some Observations on Female Urology.—Stevens cites a number of cases that illustrate the similarity in symptomatology often existing in pathologic conditions of the female urinary and generative organs and emphasize the importance of examination of the uterus and adnexa as well as the urinary tract in most instances. Pain and other symptoms associated with ectopic kidneys are sometimes suggestive of lesions of the female generative organs and pyelography will frequently reveal unsuspected pathologic changes. Both cystography and cystoscopy are of value in the diagnosis of bladder displacements and deformities following childbirth and pelvic surgery. Urethral strictures are common in women. The majority are located at the external meatus and may be congenital or acquired. They are frequently responsible for pathologic changes in the upper part of the urinary tract and for a large variety of subjective symptoms, including pain in various locations. The early detection and correction of strictures and other conditions responsible for obstruction of the female urethra is obviously of great importance. The average size of the normal urethra in the adult female is F. 26. The average size of urethral strictures is F. 21.5. Urethrography is a valuable diagnostic procedure. It is frequently indicated in the presence of symptoms suggestive of pathologic changes in the urinary tract in women. Lesions of the urethra play an important part in female urology.

Kentucky Medical Journal, Bowling Green

34: 41-82 (Feb.) 1936

Presentation of Patients with Fracture of Neck of Femur Treated by Key Method. G. A. Hendon, Louisville.—p. 42.

Hypoparathyroidism: Case. C. E. Gaupin, Louisville.—p. 44.

Poliomyelitis, Bulbar Type: Report of Case. F. G. Speidel, Louisville.—p. 45.

Treatment of Syphilis: Treatment of Early Syphilis. A. B. Loveman, Louisville.—p. 46.

Id.: Late Syphilis. A. M. Leigh, Louisville.—p. 50.

Id.: Prenatal and Congenital Syphilis. W. U. Rutledge, Louisville.—p. 51.

Coronary Thrombosis: Differential Diagnosis with Note on Angina Abdominis. G. H. Gregory, Versailles.—p. 58.

Indications and Contraindications for Blood Transfusion. C. A. Morris, Covington.—p. 63.

Pediatric Therapeutics. G. Buttorff, Louisville.—p. 67.

Secondary Anemia Simulating Primary Anemia: Unusual Case. Margaret J. Hatfield, Louisville.—p. 76.

Gongylonema with Exhibition of Specimen: Case. Lillian H. South, Louisville.—p. 78.

Laryngoscope, St. Louis

46: 1-84 (Jan.) 1936

External Fronto-Ethmosphenoidal Operation. R. Luongo, Philadelphia.—p. 1.

Treatment of Chronic Sinus Infection with Undenatured Bacterial Antigens. F. C. Kracaw, Oakland, Calif.—p. 26.

Cavernous Hemangioma of Hard and Soft Palate, Anterior and Posterior Pillars of Pharynx and Larynx. J. F. Woodward Jr., New York.—p. 32.

Trigeminofacial Reflexes. S. M. Weingrow, Bronx, N. Y.—p. 42.

Auditory Function Studies in Unselected Group of Pupils at the Clarke School for the Deaf: I. General Survey of Hearing Acuity. Ruth P. Guilder and Louise A. Hopkins, Northampton, Mass.—p. 46.

Vertigo. A. A. Cinelli, New York.—p. 64.

Military Surgeon, Washington, D. C.

78: 81-160 (Feb.) 1936

Report of Field Test of an Experimental Animal Drawn Ambulance. J. U. Weaver.—p. 81.

Homemade Adjustable Collar for Fractures of Cervical Vertebrae. F. T. Chamberlin.—p. 92.

Short History of Treatment of Maxillary Fractures. L. C. Fairbank.—p. 95.

Study of Fatigue. M. C. Grow.—p. 103.

Duties of a Consultant on Neuropsychiatry on the Staff of the Chief Surgeon, General Headquarters. H. A. Steckel.—p. 119.

Influence of Contrast Mediums in Development of Radiologic Diagnoses. B. A. Moxness.—p. 124.

Disease in Military Campaigns. N. Mercer.—p. 130.

Last Days of "Stonewall" Jackson. C. B. Camerer.—p. 135.

Missouri State Medical Assn. Journal, St. Louis

33: 39-84 (Feb.) 1936

Prevention of Chronic Osteomyelitis; Early Diagnosis and Treatment of Acute Osteomyelitis. J. A. Key, St. Louis.—p. 39.

Comparison of Enucleation and Transurethral Prostatic Resection. R. L. Hoffmann, Kansas City.—p. 43.

Cesarean Section: Discussion of Its Indications and Incidence in the St. Louis Maternity Hospital. O. H. Schwarz and R. Paddock, St. Louis.—p. 45.

Fat Embolism. R. Koritschoner and A. Sophian, Kansas City.—p. 48.

Complications of Appendicitis: Report of Six Hundred Cases. J. W. Stewart, St. Louis.—p. 52.

Study of Thyroidectomized Patients. V. H. Bergmann, Kansas City. —p. 57.

Menstrual Dysfunctions: Review of Treatment by Glandular Therapy. S. Weber, St. Louis.—p. 60.

Treatment of Cataract in Diabetic Patients. W. C. Cheek, Springfield. —p. 70.

Thoracopagus: Report of Case in Otherwise Normal Twins. E. J. Nienstedt, Blodgett.—p. 71.

New England Journal of Medicine, Boston

214: 183-226 (Jan. 30) 1936

Congenital Absence of Pericardium: Report of Case. W. E. Ladd, Boston.—p. 183.

*Question of "Influenza" and Atypical Pneumonia. J. W. Cass Jr., Boston.—p. 187.

Partially Purified Liver Extract Therapeutically Effective in Pernicious Anemia. Y. Subbarow, B. M. Jacobson and C. H. Fiske, Boston.—p. 194.

Mechanism and Effects of Abdominal Compression in Treatment of Pulmonary Tuberculosis. B. Gordon, Philadelphia.—p. 195.

Peptic Ulcer: Study of Disease Before and After Demonstrated Ulcer. M. A. Schnitker and W. A. Evans Jr., Boston.—p. 198.

Dermoid Teeth in External Auditory Canal, with Comments on Teratomas and Dermoids in General. G. G. Marshall, Rutland, Vt.—p. 202.

Question of "Influenza" and Atypical Pneumonia.—Cass observed a group of fifty-three cases, each of which it was felt justifiable to call "influenza" (Francis). These patients all recovered and the only points of interest were that six developed mild pansinusitis with symptoms of this complication for a duration of from four to seven days. These cases all responded to medical treatment. Two other patients developed acute otitis media, both unilateral, and both required paracentesis. The second group consisted of seventeen cases in which, in addition to the clinical picture of influenza, definite signs of involvement of the chest were present and the active course of the disease extended over a period of from five to sixteen days. The third group consisted of two cases, both fatal, in which hemolytic streptococcus empyema developed. In addition to the symptoms considered necessary for diagnosis, all patients complained early of vague abdominal distress with marked distention and anorexia. The principal complaint in addition to prostration was a cough, this being harsh, dry, nonproductive and coming in paroxysms. Paroxysms were particularly frequent during the latter part of the afternoon and during the night. They were also brought on at any time by movement or physical effort on the part of the patient, or marked change in temperature of the room. The patients with involvement of the chest were subject to alarming waves of cyanosis, in addition to the constant appearance of extreme toxicity. The two patients with empyema complained of a severe pleural type of pain. The temperature was of the septic type and varied only in degree and duration in the different groups. The temperature returned to normal in all cases by lysis. The pulse, characteristically, was not so high as one would expect in all except the fatal cases. The typical case of influenza is so similar to what is commonly called "grip" that the diagnosis is probably not made unless there is a recognized epidemic present. The complications of the typical cases are usually infections of the sinuses and ears. These seldom require surgical treatment other than paracentesis of the ear. The cases of pulmonary involvement included in this material were strikingly similar. Many other pneumonias were seen with white blood counts of from 6 to 20 thousand and were not proved pneumococcic pneumonias, but the clinical pictures were so different one from the other that no consistent material could be obtained from them. With the present available data, it is impossible for the author to state that the cases classified as group II were not simply complications of influenza. However, their clinical pictures were so strikingly similar and hemolytic streptococci were so commonly found associated with the disease that it is difficult for him to classify them other than as a specific type of pneumonia. They were not seen during the height of a severe influenza epidemic and their similarity thus conforms to the proper time element. The two fatal cases definitely terminated with a hemolytic streptococcus empyema or pleurisy, and undoubtedly also a septicemia.

New Orleans Medical and Surgical Journal

88: 485-542 (Feb.) 1936

Causes and Treatment of Dysmenorrhea, with Especial Reference to Value of Resection of Superior Hypogastric Plexus in Obstinate Cases. T. B. Sellers and J. T. Sanders, New Orleans.—p. 485.

Vaginal Hysterectomy: Its Indications, Technic and End Results. C. H. Tyrone, New Orleans.—p. 490.

Pyloric Occlusion Following Ingestion of Sulfuric Acid. U. Maes, New Orleans.—p. 494.

Early Recognition of Carcinoma of Colon and Rectum. D. C. Browne, New Orleans.—p. 495.

Agranulocytic Angina: Report of Two Recent Cases in Children. P. L. Perot, Monroe, La.—p. 500.

Pituitary Infantilism. S. Jacobs, New Orleans.—p. 506.

Gonococcic Conjunctivitis: Analysis of One Hundred and Fifty-Six Cases. H. F. Brewster, New Orleans.—p. 508.

Treatment of Bronchial Asthma, with Especial Reference to Intravenous Administration of Hydrochloric Acid. U. Giles, M. Gardberg and J. B. Dismukes, New Orleans.—p. 510.

New York State Journal of Medicine, New York

36: 139-218 (Feb. 1) 1936

*Acute Demyelinizing Disseminated Encephalomyelitis. A. Ferraro and G. A. Jervis, New York.—p. 139.

Observations of Clinical Course of Arteriosclerotic Auricular Fibrillation. L. F. Bishop and L. F. Bishop Jr., New York.—p. 156.

The Practical Management of Dermatitis with Allergic Etiology. H. H. Bauckus and C. F. Siekmann, Buffalo.—p. 159.

Study of Infant Care in a Rural Community. Marjorie F. Murray and Ruth I. Lyman, Cooperstown.—p. 165.

Pelvic Infection: Laboratory Aids in Diagnosis and Treatment. T. C. Peightal, New York.—p. 173.

Pulmonary Tuberculosis: Serial Roentgen Studies in Superinfections. H. K. Taylor, New York.—p. 181.

Acute Demyelinizing Disseminated Encephalomyelitis.—Ferraro and Jervis report a case of acute demyelinizing encephalomyelitis characterized pathologically by: (1) two large diffuse symmetrical foci of demyelinization in the medullary substance of the cerebral hemispheres, comparable to the foci described in diffuse sclerosis; (2) several areas of concentric demyelinization, i. e., comparable to the one described in the so-called concentric sclerosis, and (3) numerous small patches of demyelinization scattered throughout the cerebral hemisphere, the basal ganglions, the pons and the medulla oblongata and comparable to the ones described in acute multiple sclerosis. The authors stress the importance of the association in their case of clinical and pathologic features of diffuse sclerosis, concentric sclerosis, acute multiple sclerosis and disseminated encephalomyelitis. A brief account of the opinions of various authors as to the relationship of these conditions is given and the belief is expressed that diffuse sclerosis, concentric sclerosis, acute multiple sclerosis and disseminated encephalomyelitis might constitute a large nosologic group with identical underlying clinical and pathologic observations. The question whether the same etiologic factors are at the base of the various conditions mentioned is not ready for solution. Some experimental data, however, point to the fact that in the nervous system different etiologic factors may produce pathologic changes common to acute encephalomyelitis, multiple sclerosis and diffuse sclerosis.

Northwest Medicine, Seattle

35: 39-78 (Feb.) 1936

Clinical Management of Poliomyelitis. E. B. Shaw, San Francisco.—p. 39.

Epidemic Meningitis: Treated by Intravenous Injections of Meningococcus Antitoxin. J. R. Karel, Seattle.—p. 48.

Meningo-Encephalitis: Case, with Especial Reference to Organism Found in Spinal Fluid. M. B. Marcellus, E. L. Crouch, San Francisco, and M. C. Terry, Palo Alto, Calif.—p. 50.

Physiologic Considerations in Cardiac Disease. L. A. Crandall Jr., Chicago.—p. 52.

Abruptio Placentae. H. H. Skinner, Yakima, Wash.—p. 59.

Peptone Broth in Peritonitis. H. Feagles, Chehalis, Wash., and C. G. Bain, Centralia, Wash.—p. 62.

Fractures of Pelvis. W. R. Cubbins, Chicago.—p. 63.

Ohio State Medical Journal, Columbus

32: 97-192 (Feb. 1) 1936

The Heart as a Surgical Organ, with Especial Reference to Development of New Blood Supply by Operation. C. S. Beck, Cleveland.—p. 113.
Practical Use of Bacteriology by the Ophthalmologist. S. R. Gifford, Chicago.—p. 118.
Diabetic Coma. T. P. Sharkey, Dayton.—p. 123.
Some Industrial Aspects of Acute Perforation and Hemorrhage of Peptic Ulcer. A. J. Beams, Cleveland.—p. 130.
Observations on Diencephalon and Gastro-Intestinal Tract. J. D. O'Brien, Canton.—p. 134.
Multiple Hemorrhagic Sarcoma of Skin (Kaposi). C. T. Pearce and L. E. Valker, Cincinnati.—p. 137.
Development of Preventive Medicine. F. Van Orsdall, Columbus.—p. 139.
Case Presenting Problems in Clinical Medicine: Numerous Attacks of Mild Abdominal Cramps for Four Years Prior to Onset of an "Acute Abdomen." H. L. Reinhart and G. I. Nelson, Columbus.—p. 142.

Oklahoma State Medical Assn. Journal, McAlester

29: 39-68 (Feb.) 1936

*Massive Onlay Bone Grafts of the Upper Extremity. W. K. West, Oklahoma City.—p. 39.
Diabetes Mellitus. L. S. McAlister, Muskogee.—p. 46.
*Thymus Syndrome in the New-Born. H. C. Graham, Tulsa.—p. 49.
Urethral Stricture. S. F. Wildman, Oklahoma City.—p. 54.

Massive Onlay Bone Grafts.—West warns that the following points should be considered in performing massive onlay of bone grafts in cases of nonunion of fractures of the upper limbs: 1. It is not a simple procedure and trained assistants are considered necessary in order that the operation be done efficiently and in as little time as possible. 2. There is danger of tourniquet paralysis in major bone operations of the arm. Therefore the tourniquet is dispensed with. 3. In repairing fractures of the lower part of the humerus, radial nerve injuries are not unusual; but wrist drop following the operation should not be a cause of anxiety, provided the surgeon is certain that there has been no division of the nerve. Retraction, which is necessary, quite often causes sufficient pressure to cause temporary loss of radial nerve function. 4. Bone grafts for nonunion in infected compound fractures should not be done until one year has elapsed from the time of cessation of drainage. 5. The condition of the skin should be perfect in the region of the fracture and in that part of the leg from which the graft is removed, and it is not feasible to operate through heavy adherent scars. 6. In cases in which metal plates, beef bone or ivory plates have been used unsuccessfully and have resulted in bone atrophy, it is better to remove them as a preliminary operation to a second or major graft operation. 7. In cases of fracture of the upper humerus, the upper end of the graft should be driven up into the head, thus making a secure anchorage. The lower end of the graft can be maintained, because cortical bone is usually sufficiently solid. 8. The operation for the bone grafting of the two bones of the forearm at the same time is a formidable procedure. Therefore, if it is at all possible, conservative treatment should be used until at least beginning union is observed in one bone. An onlay graft fixation of one bone tends to splint the forearm to a degree that union will be obtained in both bones. In case nonunion persists in the unoperated bone, a second bone graft operation may be done. But, to do grafts on the two bones at the same time calls for smaller grafts or the necessity of removing the grafts from the two legs at the same time.

Thymus Syndrome in the New-Born.—Graham discusses his observations in children from 6 days to 6 months of age who presented the thymus syndrome. Besides the symptoms of cyanosis, stridor, suffocative attacks and dyspnea, usually referred to, four other symptoms were observed. Five of the seven infants were blue babies at birth. A rather large percentage of babies are blue at birth owing to various causes. The thymus baby is usually among them. A poor gain in weight or an actual loss was observed in four cases. The more severe the disease, the more pronounced is the loss of weight. And any gain in weight may be quite fickle. Mucus in the vomitus and feces, especially the latter, was present in three cases. Cervical retraction was present in three of the seven cases, and in one case a tentative diagnosis of meningitis had been made. Capper and Schless make the statement, with which the author concurs, that before a diagnosis of thymus syndrome can be made one must differentiate and exclude atelectasis, cerebral hemorrhage, congenital heart disease, laryngeal anomalies or infections, bronchitis or pneumonia, hypertrophied mediastinal glands, retropharyngeal, peritonsillar or cervical abscess, asthma, laryngospasm or tetany of the new-born, congenital laryngeal stridor, micrognathia, large adenoids, breath holding, macroglossia, tongue swallowing and foreign body in the pharynx or larynx. Roentgen irradiation was the only treatment that the author used in his cases. The number of treatments ranged from one to six. The size of the gland as shown roentgenographically does not necessarily indicate the severity of symptoms. Simple hyperplasia or lateral enlargement of the thymus gland should not be diagnosed as thymus disease on the basis of roentgen observations alone, but it should be carefully observed and certainly so diagnosed when symptoms appear. And, conversely, in the presence of thymic symptoms and absence of positive roentgen observations he feels that immediate and adequate roentgen therapy should never be denied any child.

Public Health Reports, Washington, D. C.

51: 109-138 (Jan. 31) 1936

Sickness Among Male Industrial Employees During the Third Quarter and the First Nine Months of 1935. D. K. Brundage.—p. 109.

51: 139-156 (Feb. 7) 1936

Calcium Cyanide Dust in Ship Fumigation. C. L. Williams.—p. 139.

51: 157-180 (Feb. 14) 1936

Results of Field Studies with Brodie Poliomyelitis Vaccine. A. G. Gilliam and R. H. Onstott.—p. 160.

South Carolina Medical Assn. Journal, Greenville

32: 1-30 (Jan.) 1936

Acne Vulgaris. J. R. Allison, Columbia.—p. 1.
Lateral Sinus Thrombosis. N. O. Eaddy, Brooklyn.—p. 4.
Some Physiologic Factors in the Production of the Allergic State, or Why Asthma. E. B. Poole, Greenville.—p. 9.
Outline of History of Orthopedic Surgery. A. T. Moore, Columbia.—p. 12.
Management of Crossed Eyes in Children. R. G. Anderson, Spartanburg.—p. 18.

Southern Medical Journal, Birmingham, Ala.

29: 119-220 (Feb.) 1936

Hyaline Membranes on Posterior Surface of Cornea, with Especial Reference to Congenital Types. C. A. Clapp, Baltimore.—p. 119.
Benign Nevus: Malignant Melanoma: Problem of Borderline Case. R. B. Greenblatt, E. R. Pund and G. T. Bernard, Augusta, Ga.—p. 122.
Concerning Colostomy. F. W. Rankin, Lexington, Ky.—p. 130.
Concerning Stomachs That Are Upside Down. D. A. Rhinehart, Little Rock, Ark.—p. 139.
Obstructions at Bladder Neck in Infants and Children. J. R. Caulk, St. Louis.—p. 142.
Roentgen Radiation in Treatment of Malignant Disease. A. N. Arneson, St. Louis.—p. 148.
Roentgenography of Larynx and Pharynx. R. P. O'Bannon, Fort Worth, Texas.—p. 154.
Treatment of Lymphoid Hypertrophies and Infections of Pharynx and Nasopharynx by Irradiation. W. W. Eagle and R. J. Reeves, Durham, N. C.—p. 159.
Prostatic Malignancy as Revealed by the Resectoscope. W. F. Scott, R. C. McQuiddy and T. Collins, Birmingham, Ala.—p. 163.
Effect of Morphine on Human Ureter: Clinical Application. N. F. Ockerblad and H. E. Carlson, Kansas City, Kan.—p. 166.
Roentgen Study of Mediastinal Tumors. W. R. Brooksher, Fort Smith, Ark.—p. 169.
Investigations Concerning Hookworm Disease in Southern States, with Suggestions for Continued Control. W. S. Leathers and A. E. Keller, Nashville, Tenn.—p. 172.
Effect of Various Analgesics on the New-Born. M. S. Lewis, Nashville, Tenn.—p. 178.
Poliomyelitis Epidemic in North Carolina. A. S. Root, Raleigh, N. C.—p. 184.
Case Presenting Intra-Ocular and Other Evidences of Increased Intracranial Pressure Without Brain Tumor. C. L. Lamar, Birmingham, Ala.—p. 191.
Discussion of Ménière's Syndrome in Head Injuries and Myxedema. J. A. Shield, Richmond, Va.—p. 193.
Recent Advances in Diagnosis and Treatment of Allergic Disease, with Especial Reference to Glucose Tolerance and Metabolism. H. B. Wilmer, M. M. Miller and J. T. Beardwood, Philadelphia.—p. 197.
Relation of Allergy to Gastro-Enterology. Marion T. Davidson, Birmingham, Ala.—p. 202.
Comparison of the Kline and Noguchi Modification of Wassermann Test. E. B. Ritchie, San Antonio, Texas.—p. 207.
Improved Technic for Catheterizing Male Bladder. G. Walker, Baltimore.—p. 209.
Extreme Nitrogen Retention in Case of Carcinoma of Bladder. W. N. Blount, Laurel, Miss.—p. 211.
Importance of an Organized Cancer Clinic. Q. U. Newell, St. Louis.—p. 212.

Tennessee State Medical Assn. Journal, Nashville

28: 487-530 (Dec.) 1935

Mutual Obligations of the Medical Profession and the Public. N. S. Shofner, Nashville.—p. 487.
Heart Disease and Pregnancy. W. D. Strayhorn, Norris.—p. 492.
Management of Occipitoposterior Position: Report of Seven Hundred and Twenty-Eight Cases. M. S. Lewis, Nashville.—p. 499.
Influenza and the Nervous System. S. T. Rucker, Memphis.—p. 510.

29: 1-42 (Jan.) 1936

State Medicine. H. H. Shoulders, Nashville.—p. 1.
An Address. B. C. Smith, Kingsport.—p. 13.
Some Practical Suggestions on the Tuberculosis Problem. W. W. Hubbard, Nashville.—p. 16.
Hyperinsulinism and Epilepsy. C. R. Thomas, Chattanooga.—p. 21.
Results in X-Ray Treatment of Certain Diseases of Eye. W. S. Lawrence, Memphis.—p. 28.

Texas State Journal of Medicine, Fort Worth

31: 545-602 (Jan.) 1936

Abscess of Larynx: Report of Cases. C. P. Schenck, Fort Worth.—p. 549.
Modern Indications for Therapeutic Abortion from the Neurologic Standpoint. T. H. Harris, Galveston.—p. 554.
Cardiac Indications for Therapeutic Abortion. W. G. Reddick, Dallas.—p. 556.
Modern Indications for Therapeutic Abortion in Nephritic Complications. J. Kopecky, San Antonio.—p. 560.
Modern Indications for Therapeutic Abortion in Pulmonary Complications. W. S. Horn, Fort Worth.—p. 563.
Intestinal Obstruction in Pregnancy and Labor. W. E. Massey, Dallas.—p. 566.
Benign Uterine Hemorrhage. J. K. Smith, Texarkana.—p. 569.
Present Day Conception of Cleft Lip and Palate Surgery. H. L. D. Kirkham, Houston.—p. 571.
Clinical Studies on Action of Acetyl-Beta-Methylcholine Chloride (Mecholyl). E. H. Schwab, W. L. Marr and R. M. Moore, Galveston.—p. 574.
The Age of Choice for Nonemergency Operations in Infancy and Childhood. J. W. Duckett, Dallas.—p. 578.

Virginia Medical Monthly, Richmond

62: 619-684 (Feb.) 1936

Treatment of Acute Respiratory Diseases. F. C. Rinker, Norfolk.—p. 619.
Treatment of Acute Infections of Upper Urinary Tract. J. F. Geisinger, Richmond.—p. 622.
Treatment of Toxemias of Pregnancy. T. J. Williams, University.—p. 626.
A More Rational Treatment of the Insane. H. C. Henry, Petersburg.—p. 630.
Endocrines and Personality. J. Kotz and H. Douglas, Washington, D. C.—p. 635.
Chordomas: Report of Case. O. Harmos and L. A. Palmer, Norfolk.—p. 638.
Through Fifty Years—1885-1935. R. H. Garthright, Vinton.—p. 649.
Spontaneous Fistulas of Larynx: Case Report. O. C. Jones, Newport News.—p. 654.
*Sterility from the Standpoint of the Female. P. Rucker, Richmond.—p. 656.
Chronic Ulcerated Colitis. C. E. Martin, North Emporia.—p. 660.
Etiology of Indigestion. O. T. Amory, Newport News.—p. 663.
Emergency Minor Surgery. S. Leigh Jr., Norfolk.—p. 667.
Traumatic Cyanosis in the New-Born. W. McMann, Danville.—p. 670.

Sterility from the Standpoint of the Female.—Rucker states that 36 per cent of patients with primary sterility and 65 per cent of those with secondary sterility (primary, in which the patient has never conceived, and secondary, in which the patient has been pregnant at least once, even if it was only an abortion) became pregnant when treated for cervicitis. Posture and pessary treatment gave 16 per cent positive results in primary sterility and 64 per cent in secondary sterility. In the primary group 26 per cent of the patients with patent tubes and 48 per cent of the patients in the secondary group became pregnant soon after this test. Half of the patients in the primary group with partially closed tubes and 20 per cent of those in the secondary group became pregnant. Of the primary sterility patients with closed tubes, 15 per cent and 33 per cent of the secondary patients became pregnant. All secondary sterility patients and 21 per cent of the primary sterility patients became pregnant on thyroid medication when such treatment was indicated either from the history or because of a minus metabolic rate. The primary group yields a total of 38 per cent of pregnant cases and the secondary group 52 per cent. It would seem, then, that cases of secondary sterility are more amenable to treatment by ordinary gynecologic methods than the primary cases. Conversely, more of the cases of primary sterility have a deeper fundamental endocrine, developmental or congenital basis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

58: 427-516 (Dec.) 1935

Effect of Increased Intracranial Venous Pressure on Pressure of Cerebrospinal Fluid. T. H. B. Bedford.—p. 427.
Vasodilatation and Vasoconstriction in Response to Warming and Cooling the Body: Study in Patients with Hemiplegia. V. Uprus, J. B. Gaylor, D. J. Williams and E. A. Carmichael.—p. 448.
Vasomotor Responses in Hemiplegic Patients. G. Stürup, B. Bolton, D. J. Williams and E. A. Carmichael.—p. 456.
Myographic and Electromyographic Studies of Myasthenia Gravis. D. B. Lindsley.—p. 470.
*Peripheral Nerves in Cases of Subacute Combined Degeneration of Cord. J. G. Greenfield and E. A. Carmichael.—p. 483.
Subpial Resection of Cortex in Treatment of Jacksonian Epilepsy (Horsley Operation), with Observations on Areas 4 and 6. E. Sachs.—p. 492.

Peripheral Nerves and Subacute Combined Degeneration of Cord.—Greenfield and Carmichael obtained peripheral nerves from cases of subacute combined degeneration. The myelin sheaths were stained by placing the nerves in a 1 per cent solution of osmic acid for from twenty-four to thirty-six hours immediately after they were removed from the body. The authors accept the great difference in measurements as well as in counts of myelin sheaths in the nerves of cases of subacute combined degeneration of the cord from those found in normal nerves as evidence that there is a true degeneration of the peripheral nerves in this disease. Except in the rapidly fatal case of subacute combined degeneration of the cord, there was very little abnormality in the contour of the myelin sheaths as seen in longitudinal sections, and nothing was ever seen suggesting wallerian degeneration. On the other hand, the preponderance of myelin sheaths of small size, as well as the poor staining of many of the myelin sheaths as compared with those in normal nerves, suggests that in subacute combined degeneration the nerve fibers suffer a general impoverishment of myelin. No doubt wallerian degeneration of individual fibers may occur in severe and rapidly progressive cases, but this must be exceptional. The appearance in the osmic acid sections might be interpreted as indicating edema of the fine nerve bundles. That edema of nerve does occur is known, and it is the rule in many forms of polyneuritis. The presence of edema in the nerves in cases of subacute combined degeneration, if established, would therefore confirm rather than disprove the view that lesions of peripheral nerves are present in this disease. However, no definite evidence of edema was found in celloidin sections of the peripheral nerves in any case of this series, although the Weigert-Pal sections of these nerves gave evidence of considerable loss of myelin sheaths. Therefore it is not possible to explain these results on the basis of edema of the peripheral nerves.

Bristol Medico-Chirurgical Journal

52: 191-262 (Winter) 1935

The Twenty-Fourth Long Fox Memorial Lecture: Observations on Pain. M. Critchley.—p. 191.
Results of Treatment of Mental Conditions. G. de M. Rudolf.—p. 219.

British Journal of Children's Diseases, London

32: 241-326 (Oct.-Dec.) 1935

Neurologic Complications of Varicella: Clinical and Epidemiologic Study. E. A. Underwood.—p. 241.
Analysis of Over Four Thousand Cases of Educational Deafness Studied During the Past Twenty-Five Years. M. Yearsley.—p. 264.
Diabetes Insipidus as Manifestation of General Miliary Tuberculosis. J. W. Healy.—p. 275.

British Medical Journal, London

2: 1241-1288 (Dec. 28) 1935

Pathology of Osseous Tissue. A. M. Drennan.—p. 1241.
*Carcinoma of Colon. H. B. Devine.—p. 1245.
Diagnosis of Doubtful Cases of Scarlet Fever. W. A. Brown and V. D. Allison.—p. 1249.
Urinary Antiseptics: Critical Survey. J. T. Tait.—p. 1252.
Light Treatment in Tuberculosis. T. G. Millar.—p. 1254.
*Splint for Broken Clavicles Which Preserves Function. A. K. Henry.—p. 1255.

Carcinoma of Colon.—Devine bases his method of operating on the distal colon for carcinoma on the principle that, if in an animal a segment of intestine is experimentally isolated and thus deprived of its function, its bacterial content will slowly

disappear. The proximal colon is disconnected completely and permanently from the distal colon, at the transverse colon if mobile enough or at the hepatic flexure. Completeness and permanence is ensured by inserting the cut ends of the intestine into small separate openings in the abdominal wall. No feces can pass into and infect the isolated segment. Time, then, becomes a factor in bringing about a "debacterialization." After this disconnection the distal colon is completely "defunctioned." Its contents can now be washed out, and, with the process of time and antiseptic preparations, its bacterial contents become reduced to a minimum. In this defunctioned distal colon, which is quiescent, retracted and clean, it is possible to perform safely an orthodox sutured anastomosis. This is still possible even if the segments of intestine in question are incompletely peritonealized and even if there is great disparity in their caliber. In the case of carcinoma of the upper and lower parts of the sigmoid the requisite amount of intestine that should be removed with the carcinoma, and the proper amount of pertaining mesenteric leaf, can be critically estimated and removed. The healing of the anastomosis under such favorable conditions is a most important surgical principle. The postoperative course after these operations is uneventful—an indication of the absence of even mild grades of local peritonitis, and therefore of any degree of infection. Aseptic anastomosis is rendered possible by the fact that it is not necessary for the lumen of "defunctioned" colon to be at once reconstituted. In the case of rectosigmoid growths (a two-stage operation) the distal colon is defunctioned and prepared for three weeks or a month. The growth is then resected, and the divided end of the sigmoid is sutured to that of the rectum. In a three-stage operation the anastomosis is not made after resection, as in the first method, but the severed rectum is sutured, the peritoneum is closed over it and the divided end of the sigmoid is implanted in the wound. Six months later, when the rectal stump is firmly covered with peritoneum, when the distal colon and the rectum are almost free from infection and when the patient, free from the toxic effects of the cancer, is greatly improved in general health, the sigmoid is connected to the rectum by making, in the following way, a "telescopic" anastomosis: The distal colon is mobilized and drawn through an opening that is made in the stump of the now peritoneum-covered rectum and fixed in this position. The closed rectal cavity is laid widely open by cutting this sphincter. The intestinal end may be drawn through the peritoneum-covered abdominal wall on to its surface or it may be drawn through the peritoneum-covered rectum into a rectal space, which is wide open externally. By the time the rectosigmoid junction is complete the sphincter has healed; in order to make the patient again continent, it only remains to reconnect the colonic segments. In closing the disconnecting anus the enterotome is used and the spur is clamped for forty-eight hours and then cut through by further pressure. Five or six days later procaine hydrochloride is injected around the intestinal ends, which are then dissected from the skin and muscle and, with the small openings in the abdominal wall, closed. Closure is prompt, as a rule.

Splint for Broken Clavicles.—For fracture of the clavicle, with the patient seated on a chair, Henry molds a plaster girdle to grip the iliac crests. An assistant meanwhile passes a loop of ordinary bandage under the axilla on the injured side; then, standing behind the patient on another chair, he uses this loop to pull the shoulder steadily backward, outward and up as high as possible. The plaster, after encasing the lower abdomen, is then brought to the axilla of the injured side and surrounds the shoulder and upper third of the arm in such a way as to maintain the reduction obtained by the loop of bandage. A short sleeve enclosing the arm makes an angle of about 40 degrees with the side of the chest and is wide enough to allow axial rotation of the limb. The opposite shoulder is left free. Children require a wide bay in the jacket to allow room for meals. As soon as the plaster has set, the patient has painless use of the hand, wrist and elbow on the injured side. The plaster is removed on the twenty-first day. The patient at once has free use of the ipsilateral shoulder except for vertical elevation of the arm, but this is soon recovered when the slight stiffness due to the plaster cast has gone —often within an hour. The function of the rest of the limb is normal. The patient requires no further treatment and can resume hard work within a week. The author has treated five cases of complete fracture of the middle third of the clavicle in this way since November 1934. A hand's breadth, measured from the axilla, is the best length for the short sleeve. Provided the plaster is properly based on the pelvis and care is taken to keep the shoulder high when it is drawn back, correction of the deformity will be almost as good as that which is said to reward those who lie on sandbags for three weeks.

Edinburgh Medical Journal

43: 1-60 (Jan.) 1936

Fever Therapy: Its Rationale in Diseases of Nervous System. J. Wagner-Jauregg.—p. 1.
Changing Conceptions of Disease. W. Langdon-Brown.—p. 13.
Studies in Method and Standardization of Blood Examination: II. Sedimentation Rate and Sedimentation Volume of Blood. W. F. Harvey and T. D. Hamilton.—p. 29.

Irish Journal of Medical Science, Dublin

No. **120:** 669-716 (Dec.) 1935

Bone Grafting. H. F. MacAuley.—p. 669.
Rôle of Surgery in Treatment of Pulmonary Tuberculosis. M. P. Burke. —p. 676.
Blood Pressure and Aortic Aneurysms: Applicability of Bernoulli's Theorem. J. Bell.—p. 685.
Ramifications of Therapeutics. J. Sheil.—p. 695.

Journal of Hygiene, London

35: 449-564 (Dec.) 1935

Diphtheria Toxoid Reaction (Moloney) Test: Its Applications and Significance. E. A. Underwood.—p. 449.
*Long Term Experiment with Rats on Human Dietary. J. B. Orr, W. Thomson and R. C. Garry.—p. 476.
Q Proteins and Nonspecific O Antigens of Cholera Vibrio. P. B. White. —p. 498.
Bacteriology of Bovine Streptococcus Mastitis. F. C. Minett.—p. 504.
*Pseudo Schick Reaction and Intradermal Toxoid Test of Moloney: Their Relationship and Significance. M. Mitman.—p. 512.
Influence of Protein Content of Recovery Medium in Germicidal Tests: Note. J. G. Baumgartner and M. D. Wallace.—p. 534.
Experimental Tubular Necrosis of Kidneys Accompanied by Liver Changes Due to Dioxan Poisoning. S. de Navasquez.—p. 540.
Clotting of Plasma Through Staphylococci and Their Products. H. D. Walston.—p. 549.

Experiment with Rats on Human Dietary.—For two and one-fourth years, Orr and his associates maintained a large colony of rats on a diet based on a dietary survey of a human population. Half of the rats were fed on the human survey diet or this diet with a small increase in milk, the other half on the same diet supplemented with additional milk and green food. Four generations of animals were reared from the same stock. The rats on the human diet with additional milk and green food were healthy in all respects so far as can be judged from rats on a stock diet and from the data of other workers. On the other hand, in spite of an exactly similar environment and heredity, the animals without additional milk and green food showed (1) a slightly impaired reproductive capacity, (2) a markedly increased death rate due to increased susceptibility to an infection to which all rats were equally exposed, (3) a definitely slower rate of growth, (4) a lower hemoglobin content in the blood and (5) a clinically poorer condition as judged by behavior and state of the coat. The results are applicable to some extent to human beings. The authors suggest that a large section of the human population is still far from the optimal state of nutrition and that much could be done, by means of improved food supply, to raise the resistance to infection and to improve the physique of human beings.

Pseudo Schick Reaction and Toxoid Test of Moloney.—Mitman observed 212 new members of the staff of the North-Eastern Fever Hospital who were Schick and Moloney tested. The Schick-positive reactors were immunized with formol toxoid and post-Schick and Moloney tests were performed. He discerned that the intradermal toxoid test of Moloney or Zoeller corresponds exactly with the pseudo response in the Schick test. The pseudo response is as efficient as the Moloney response for detecting possible reactors to immunizing doses of toxoid and is a more accurate control of the Schick test. The Moloney test therefore appears redundant. A positive Moloney or pseudo reaction accurately indicates those who will react to immunization; but a negative Moloney or pseudo reaction is no guaranty that the subject will not react. The Moloney or pseudo reaction is evidence of bacterial hypersensitiveness

to specified products of the body of the diphtheria bacillus. Zoeller's theory that hypersensitiveness is a half-way stage between susceptibility and immunity is incorrect. Reactions usually, but not invariably, develop conjointly with immunity. Because of this parallelism, tests of hypersensitiveness give information as to the state of immunity. Bacterial hypersensitiveness bears a close relationship to antitoxic immunity. Immunity to diphtheria is something more than antitoxic immunity. If bacterial immunity exists, bacterial hypersensitiveness appears to have some place in immunity.

Lancet, London

2: 1449-1498 (Dec. 28) 1935

Undulant Fever, with Especial Reference to Its Clinical Aspects in England and Wales. W. Dalrymple-Champneys.—p. 1449.
Intranatal and Neonatal Death: Review of Ninety-Nine Consecutive Cases. J. M. Smellie.—p. 1453.
*Study of Hemolytic Streptococcic Fibrinolysis in Chronic Arthritis, Rheumatic Fever and Scarlet Fever. C. H. Stuart-Harris.—p. 1456.
*Rheumatoid Arthritis Believed to Be of Tuberculous Origin: Report of Two Cases. W. S. C. Copeman and R. D. Clay.—p. 1460.

Hemolytic Streptococcus Fibrinolysis in Arthritis and Scarlet Fever.—Stuart-Harris showed that the presence of resistance to fibrinolysis was related to hemolytic streptococcus infection, particularly if the resistance was of maximal degree; also that in streptococcic tonsillitis and pharyngitis resistance to fibrinolysis, if it occurred, was found in the second or third week after the onset of the infection. He has extended this work to include cases of chronic arthritis, rheumatic fever and scarlet fever. He has found that the blood of patients with rheumatoid arthritis is susceptible to streptococcic fibrinolysis. The blood of patients with rheumatic fever is resistant to fibrinolysis, particularly during the active stage of the disorder or after intercurrent streptococcic infection during convalescence from activity. The blood of patients with scarlet fever is resistant to fibrinolysis within three weeks from the onset in a minority of individuals and resistant in a majority of those patients with disorders of the heart or joints. Hemolytic streptococcus infection is considered to be related to rheumatic fever but not to rheumatoid arthritis. Hemolytic streptococcus infection of the respiratory tract in a rheumatic subject probably differs from a similar infection in a nonrheumatic subject.

Rheumatoid Arthritis.—Copeman and Clay cite two cases of rheumatoid arthritis that suggested a tuberculous etiology and state that after full examination they decided to try the effect of a minute injection of tuberculin. The results, taken in conjunction with the other investigations reported, suggest that other cases of rheumatoid arthritis might prove to be of tuberculous origin if they were studied from this point of view. The two women responded to the injection of a minute dose of tuberculin by a general pyrexial reaction. A focal reaction also occurred in all the affected joints and in one case lasted for ten days. In addition to these reactions, in the first case an area of heretofore undetected infiltration of the lung was rendered evident by the appearance of physical signs, confirmed roentgenologically, while in the other case a cutaneous tuberculid developed on the leg shortly after the injection. This ultimately healed. Most of the pathologic tests usually employed for the diagnosis of tuberculosis were positive in both cases. The authors believe that an unsuspected latent tuberculous focus was present in each case and was activated temporarily by the injection of tuberculin.

Medical Journal of Australia, Sydney

2: 833-882 (Dec. 21) 1935

An Address. G. Brown.—p. 833.
Ether Is Not Dead. Z. Mennell.—p. 837.
Biochemical Aspects of Anesthesia. I. Maxwell.—p. 841.
Sources and Pharmacology of Impurities in Anesthetics. B. L. Stanton.—p. 845.
Uses of Carbon Dioxide in Anesthesia. E. C. Black.—p. 849.
Anesthesia in America. G. Troup.—p. 857.
Choice of Anesthesia in Some Surgical Conditions. G. L. Lillies.—p. 863.
Anesthetic Failures. An Anonymous Contributor.—p. 866.

2: 883-908 (Dec. 28) 1935

Some Allergic Disorders. D. L. Barlow.—p. 883.
Clinical Study of Micturition. E. G. Robertson.—p. 890.
Problems of Junior Resident Medical Officers. I. I. Brodsky.—p. 895.

Medical Press and Circular, London

191: 533-554 (Dec. 18) 1935

*Angina Pectoris. C. B. Perry.—p. 540.
Some Present Day Public Health Problems. J. A. Harbison.—p. 543.
Savagery in Myths and Dreams. F. P. Weber.—p. 546.
Bacteriology of the Atmosphere. R. C. McLean.—p. 547.

Angina Pectoris.—Perry points out that three characteristics serve to differentiate anginal pain: the squeezing, constricting nature of the pain, its site and the relationship of the pain to physical or mental activity. A fourth feature, which is not constant, is the psychologic component of the symptoms, the sense of impending death. This feature may be described with pain other than anginal, for instance, with the pain of gallbladder disease. The two conditions likely to be confused with angina are coronary thrombosis and the left inframammary pain or "heartache" so frequently seen in debilitated, anxious women. In coronary thrombosis the pain is identical in character, but, if anything, more severe than that of angina pectoris, and the patient may give a history of previous attacks of typical angina. Left inframammary pain affects women far more frequently than men and is typically situated under the left breast, or, as the patient usually says, "over the heart." It occurs characteristically, not during exertion but when the patient is resting at the end of a long and tiring day, and it lasts for hours, long after the exertion has ceased. This symptom may occur in patients with normal or pathologic hearts but in no way affects the prognosis and must be carefully distinguished from angina pectoris, with which it has no connection. Angina pectoris occurs as a symptom in various diseases, and the main pathologic processes with which it may be found are coronary sclerosis and atheroma; hyperpiesia; syphilitic aortitis; aortic incompetence due to rheumatic heart disease, syphilitic aortitis or bacterial endocarditis; severe anemias, particularly pernicious anemia, and occasionally hyperthyroidism or paroxysmal tachycardia. In attempting to formulate a prognosis, the first thing to consider is the underlying pathologic condition. If the angina occurs as a symptom of cardiovascular syphilis, this in itself gives an average expectation of life of about five years. If the cause is a severe anemia that will respond to treatment, the outlook is correspondingly bright. In the majority of cases, however, no abnormal physical signs are found in the cardiovascular system, with the possible exception of abnormalities in the electrocardiogram. Factors indicating a poor outlook are rapid progress in the frequency of the attacks and diminution in the amount of effort required to induce the pain. Such a state of affairs obviously indicates a rapidly progressive lesion. Another factor is the degree to which the patient can and will consent to limit his activities and attempt to live within his cardiac reserve. A poor prognosis is indicated by the discovery of any evidence of ventricular failure and also by the occurrence of attacks of paroxysmal nocturnal dyspnea (cardiac asthma). The treatment of the usual coronary form of angina consists in the relief and the prevention of attacks. Relief in the majority of cases rapidly follows cessation of the activity that induced the attack. This relief may be hastened by the administration of alcohol or the inhalation of amyl nitrite. If the pain continues despite rest and nitrites, it suggests an attack of coronary thrombosis, and it is undesirable to repeat a dose of amyl nitrite, since in coronary thrombosis the essential factor is that the blood pressure should be kept as high as possible in order to encourage the opening up of anastomotic channels.

Japanese Journal of Experimental Medicine, Tokyo

13: 751-828 (Dec. 20) 1935

Studies on Bird Trematodes: V. Intermediate Host and a New Species of Bird Trematodes. N. Ishii and F. Matsuoka.—p. 751.
Ultrafiltration Experiments on Filtrable Agent of Rous Chicken Sarcoma. H. Yaoi and W. Nakahara.—p. 757.
Changes in Cells of Sweat Gland of Horses During Sweat Secretion. S. Ezima and K. Muto.—p. 767.
Studies on Etiology of Scarlet Fever. A. Imamura, H. Ono, Z. Horai, A. Fujii and H. Umetani.—p. 771.
Growth of Tubercle Bacilli in Lymph Fluid. A. Imamura and N. Naito.—p. 795.
Dehydrogenation of Bacteria. W. Nakagome.—p. 797.

Archives des Maladies de l'Appareil Digestif, Paris

25: 1009-1152 (Dec.) 1935

Ulcer of Pyloric Canal. R. A. Gutmann and R. Hoffmann.—p. 1009.
Postinsulin Glycemias in Hepatic Insufficiency. F. Fernández and J. M. Clavera.—p. 1038.
*Oxidizing Ferments of Raw Vegetables and Digestion. O. P. Matvieeff.—p. 1049.
Investigations on Pathogenesis of Gastroduodenal Ulcer. P. Docq.—p. 1057.
Humoral and Tissular Syndrome in Course of High Intestinal Fistulas. J. Bottin.—p. 1070.

Oxidizing Ferments and Digestion.—Matvieeff investigated the quantities of oxydase, peroxydase and catalase contained in various raw vegetables and in various stages of digestion. The oxydase was determined by using 1 cc. of a mixture consisting of 1 per cent naphthol, 0.75 per cent paraphenylenediamine and 1.7 per cent sodium carbonate. This is dissolved in enough distilled water to make 10 cc. and the substances are studied by soaking them with this solution. In the presence of oxydase the colors pass from violet to indigo blue. Peroxidase was determined by the Guici method. Catalase was found by adding hydrogen peroxide to the substance to be tested and obtaining water and oxygen in its presence. From the results of these studies the author concluded that the vegetable ferments play an important part in the economy of the organism. The presence of these ferments in the entire length of the intestinal tract must be important, though how is not yet clear. No action of these ferments on the pancreas could be demonstrated. These ferments are all heat labile, and it is therefore likely that the introduction of raw vegetables in the dietary may be a necessary part of the exchange metabolism.

Archives de Médecine des Enfants, Paris

38: 709-804 (Dec.) 1935

*Triangular Images of Thoracic Bases in Children. R. Debré and M. Lamy.—p. 709.
Complex Dystrophic State of Childhood (Obesity, Dwarfism, Multiple Osseous Dystrophies). H. Grenet and P. Isaac-Georges.—p. 725.
Sweetened Condensed Milk in Feeding of Well and Sick Nurslings J. Taillens.—p. 737.

Triangular Images of Thoracic Bases.—Debré and Lamy discuss the triangular images that are sometimes seen at the base of the lung in roentgenograms of children. The most important causes are bronchial dilatations, pulmonary atelectasis, whooping cough and localized pneumonia. The conditions are frequently difficult to differentiate and the formal diagnosis often involves examination with iodized poppy-seed oil and sometimes bronchoscopic exploration.

Presse Médicale, Paris

43: 2065-2096 (Dec. 21) 1935

Roentgenologic Appearance of Initial Lesion of Pulmonary Tuberculosis. R. Debré, M. Lelong and M. Mignon.—p. 2065.
Anatomoroentgenologic Study of Cardiovascular System. C. Laubry, P. Cottentot, D. Routier and R. Heim de Balsac.—p. 2071.
Primary Infection of Young Adult. Courcoux and Alibert.—p. 2076.
Roentgenologic Physiology of Iliocecal Valve. M. Chiray and A. Bosquet.—p. 2081.
Roentgen Diagnosis of Calcifications of Abdominal Aorta and Its Branches. R. Ledoux-Lebard, J. Garcia-Calderon and G. Ledoux-Lebard.—p. 2084.
New Contributions to Physiopathologic Study of Cerebral Hemorrhages. D. Paulian and I. V. Bistriceano.—p. 2088.
Endemic Hypothyroidism. S. Vomela.—p. 2090.
*Treatment of Abscess and Gangrene of Lung by Intravenous Injections of Sodium Benzoate. L. Goldkorn.—p. 2094.

Treatment of Lung Abscess and Gangrene by Sodium Benzoate.—Immediately after the intravenous administration of a sufficient dose of sodium benzoate, a curious phenomenon is noticed according to Goldkorn. The patients notice an odor both sudden and agreeable. They also have a feeling of heat in the chest and head. This proves that the sodium benzoate has a definite affinity for the pulmonary tissue. Its elimination by the air passages is a symptom of saturation. As a result of 2,200 intravenous injections he feels that the optimum drying and antiexudation dose corresponds exactly to the dose that produces the aforementioned symptoms. The effect of any treatment on pulmonary abscess is difficult to evaluate, and consequently only chronic and acute abscesses with progressive pulmonary destruction were used in evaluating the results of treatment. Two cases of chronic abscess and one of large, acute, destructive abscess were treated in this manner and are reported in detail. In five cases of bronchiectasis also a diminution in the quantity of sputum was observed. The smallest dose for pulmonary abscess is 20 cc. of a 20 per cent solution each day. When symptoms of saturation are not produced by this dose, larger doses are indicated. The technic of injection is important. It must be made slowly and 20 cc. should take five minutes. The purity of the preparation, which should be made fresh each time, is highly important. Daily injections are given. In the acute cases fifteen injections are usually enough, but in the chronic cases about thirty-six are generally necessary. They are continued until the clinical and roentgenologic signs have entirely disappeared.

Schweizerische medizinische Wochenschrift, Basel

66: 109-132 (Feb. 1) 1936

*Casuistic Contributions to Secondary Infiltrates in Course of Intrathoracal Tuberculosis in Children. F. Lichtenhahn.—p. 109.
Rare Forms of Tuberculosis of Nurslings. J. R. Dreyfus.—p. 114.
Roentgenoscopy and Roentgenography of Thorax in Diagnosis of Pulmonary Tuberculosis. A. Wernli-Haessig.—p. 116.
New Methods in Specific Therapy of Tuberculosis. A. I. Jarotzky.—p. 119.
*Fatal Poisoning by Gold Preparations. Hedwig Fatzer.—p. 120.
Patients with Pulmonary Disease at Writing Desk. J. Kollarits.—p. 121.

Secondary Tuberculous Infiltrates in Children.—Lichtenhahn points out that in the most frequent intrathoracic tuberculosis of children, namely, tuberculosis of the hilus glands, pulmonary infiltrations often develop, which cause rather acute symptoms. These infiltrations, adjacent to the diseased glands, are designated perifocal secondary infiltrations or epituberculous infiltrations. They often develop with great rapidity and may involve an entire pulmonary lobe. If they develop with sudden fever in children who had been apparently healthy before, they occasionally are mistaken for simple pneumonia, whereas, when it is known that hilus tuberculosis existed, they may be considered an acute and threatening dissemination of the tuberculous process. Although the author does not deny that tuberculosis of the hilus may occasionally take an unfavorable course, he says that roentgenoscopic control of the pneumonia-like infiltrations has revealed that they are usually harmless and disappear rapidly by complete resorption of the process, or by leaving behind traces of fibrous involution. The glandular focus, which is responsible for the secondary infiltration, often does not become visible until after the veil of exudation has been lifted by resorption. Thus the roentgenogram does not always disclose the tuberculous or epituberculous nature of the infiltrate, and other methods will be necessary for a differentiation from pneumonic or other infiltrates. The author describes the clinical aspects of several cases of temporary pulmonary infiltrates. One case, which at first was thought to be a secondary tuberculous infiltrate, later was found to be a pneumonic infiltrate, caused by a postpneumonic pulmonary abscess. The author discusses the elimination of bacilli and the problem of contagion in children with epituberculous infiltrates. He points out that formerly hilus tuberculosis was considered "closed"; that is, the elimination of tubercle bacilli was denied. Now, however, it is conceded that tubercle bacilli may be excreted in all phases of intrathoracic tuberculosis. In children with tuberculosis of the hilus region the direct demonstration of tubercle bacilli in the sputum was usually impossible, but animal tests with pharyngeal mucus, gastric contents or feces disclosed tubercle bacilli in 55 per cent of the cases with infiltrations. From this the author concludes that the possibility of the elimination of bacilli and consequently a certain infectiousness should not be disregarded in cases of hilus tuberculosis with a tendency to successive febrile exacerbations.

Fatal Poisoning by Gold Preparations.—Fatzer says that since the introduction of gold preparations, particularly in the treatment of pulmonary tuberculosis and of chronic rheumatism, undesirable complications (some with fatal outcome) have been reported repeatedly. After mentioning the symptoms of these complications, the author reports two fatal cases of gold poisoning. She reaches the conclusion that toxic symptoms may develop after the use of any gold preparation and emphasizes the necessity of watching for the appearance of such symptoms in the course of gold therapy. At the slightest sign of a toxic effect, the gold therapy should be interrupted. Typical agranulocytosis (in Schultz's meaning of that term) is rare after gold

therapy. The toxic manifestations usually involve the entire hematopoietic system. However, death may be caused also without hematic changes. It may result from hepatic impairment, enteritis or pulmonary abscess. The author points out that the slow infiltrative pulmonary processes that have a tendency to abscess formation are especially frequent after gold therapy. Some persons have a predisposition to gold poisoning. This predisposition is more frequent in women than in men and in rheumatic than in tuberculous patients.

Policlinico, Rome

43: 133-184 (Jan. 27) 1936. Practical Section

*Test of Produced Galactosuria in Estimation of Liver Functions in Lobar Pneumonia. G. Canali.—p. 133.
Aneurysm of Popliteal Artery, Late Result of Wound Suffered in War: Case. E. Dotti.—p. 147.

Test of Galactosuria for Estimation of Functions of Liver in Lobar Pneumonia.—With the test of produced galactosuria, Canali determined the behavior of the curves of the blood sugar and of bilirubinemia in lobar pneumonia. He also made studies on the rôle of liver involvement in the pathogenesis of jaundice complicating pneumonia. The test gave positive results in seven of a group of eleven patients. Bilirubinemia existed in six patients of the seven and returned to normal after the pneumonic crisis. The only patient without bilirubinemia in this group was suffering from pneumonia of a migratory type. Three of the four patients in whom the test gave negative results had simultaneously normal figures of bile pigments in the blood. They were young people in excellent health who had suffered neither from infectious diseases nor from toxic conditions and in whom the liver was probably in the best condition to stand the pneumococcic infection. The remaining patient had intense jaundice. The negative result of the test in this case was explained by the lack of absorption of galactose by the liver owing to the grave disturbances of the portal and general circulations inherent in this condition. In this case the curves of galactosemia did not change after galactose was administered to the patient. The author concludes that the results of the test prove that the liver is greatly involved during the course of pneumonia and that the involvement of this organ is the cause of pneumonic jaundice.

Prensa Médica Argentina, Buenos Aires

23: 227-290 (Jan. 22) 1936

Radiations Emitted by Cholesterol Previously Irradiated with Sun or Ultraviolet Rays. A. H. Roffo and A. E. Roffo Jr.—p. 227.
*Adrenals in Amebiasis. C. P. Waldorp and J. Reforzo Membrives.—p. 247.
Metabolism of Sexual Hormones in Women and Practical Value of Quantitative Determination of Hormones. E. Fels.—p. 250.
Tuberculous Infiltration. J. Viale and J. B. Ticinese.—p. 259.
Nervous Accidents of Spinal Anesthesia: Hemiplegia. N. Arenas and O. Blanchard.—p. 264.
Secondary Perifocal Tuberculous Infiltration with Hemoptysis: Case. M. Bilezker and R. Slemenson.—p. 276.

The Adrenals in Amebiasis.—Waldorp and Reforzo Membrives state that Addison's disease is often associated with hypoglobulia. Addison described the disease as idiopathic anemia. The presence of anemia, however, is not constant in all cases of the disease, but it depends on the intensity of the adrenal disturbances or the presence of complications. Amebiasis, especially the acute form, frequently causes grave and sometimes fatal alterations in the adrenals. The type of adrenal insufficiency due to amebic hepatitis manifests itself by the appearance of a typical Addison syndrome associated with pigmentary hepatitis. It seems to the authors that in these cases the adrenals react to the parasitic infestation of the liver by a mechanism of sensitization because of their relations to the liver in the functions of the metabolism of adrenal and hepatic pigments. The authors report two cases of adrenal insufficiency of amebic origin with typical addisonian syndrome. They call attention to the frequency with which a low arterial pressure and the presence of pernicious-like anemia are observed in patients with amebiasis. They believe that these symptoms are due to adrenal insufficiency through the same mechanism that produces them in Addison's disease. Adrenal insufficiency is also the cause of the changes in the blood picture as well as of the tendency of the temperature in those patients to remain below normal in spite of the presence of hepatitis and pernicious-like anemia.

Semana Médica, Buenos Aires

43: 161-240 (Jan. 16) 1936. Partial Index

*Diagnosis of Osseous Hydatidosis. O. Ivanissevich and A. S. Introzzi.—p. 161.
Organic-Hysterical-Sensorial-Sensitive Hemanesthesia Following Spinal Anesthesia: Case. J. J. Spangenberg and C. Rossi Belgrano.—p. 166.
Surgical Treatment and Postoperative Medical Treatment of Biliary Lithiasis. D. del Valle and E. S. Garre.—p. 169.
Membranous Dysmenorrhea: Case. A. J. Risolia.—p. 177.
Semeiology and Pharmacology of Argyll Robertson Pupil in Dementia Paralytica. R. Orlando and S. Chichilnisky.—p. 213.
Nupercaine Local Anesthesia in Surgery of Upper Part of Abdomen. L. Feldman.—p. 219.

Diagnosis of Echinococcosis of the Bones.—Ivanissevich and Introzzi wonder whether a diagnosis of osseous echinococcosis can be made early in the evolution of the infestation. They report the case of a man, aged 55, in whom a tumor developed at the knee two years after occurrence of trauma. The roentgenograms showed a deformed knee and the presence of round shadows. A diagnosis of myeloplaxomas was made and a conservative operation, with fixation of the knee in extension, was advised. At the beginning of the operation the surgeon found that it was a case of echinococcosis involving the femur, the tibia and the articular soft parts. Amputation was performed. The authors emphasize the importance of a biopsy, which in their case would have clarified the diagnosis before the operation. They conclude that echinococcosis of the bones has neither clinical nor roentgen pathognomonic characteristics, except late in the evolution of the infestation. The increase of the local temperature (Estlander's sign) does not prove the absence of echinococcosis. Echinococcosis makes its appearance in the roentgenograms at the third period of evolution of the infestation; that is, when the macrovesicular hydatid geodes have already caused erosion and cavitation of the bones. Microvesicular hydatids have the same coefficient of absorption of roentgen rays as that of the marrow bone. This fact explains the reason why large areas of microvesicular infiltration fail to appear in the roentgenograms. Roentgen round shadows indicate the presence of hydatid geodes. They make their appearance in the roentgenograms at a time when the macroscopic lesions are still latent; but, even so, the microvesicular infiltration is already extensive by this time. That is why the authors point out the importance of devising new technics for roentgen examination of the bones to detect early microvesicular infiltration. The conclusions of the authors have been verified by the observation of further cases, one of which is briefly reported.

Archiv für klinische Chirurgie, Berlin

184: 375-548 (Jan. 22) 1936. Partial Index

*Significance of Inflammatory Reaction in Carcinoma Patients. K. Ebhardt and G. Weinholtz.—p. 375.
Action of Electric Current on Intravascular Thrombi in Animal Experiment. E. Krass.—p. 383.
*Clinical Aspects and Pathologic Histology of Buerger's Form of Thrombo-Angiitis Obliterans. I. Lindenbaum and L. Kapitza.—p. 413.
Dehydrating Action of Hypertonic Solutions in Normal and in Experimentally Increased Cerebral Pressure. M. Oi.—p. 436.
Treatment of Old Perilunar Luxation. F. Prochnow.—p. 477.
Permanent Results of Resection of Prostate. H. A. Dege.—p. 484.

Significance of Inflammatory Reaction in Carcinoma Patients.—Ebhardt and Weinholtz report their studies on Kauffmann's inflammatory reaction in patients with carcinoma. They found that the patient, even in his last stages, does not have, as first assumed, a reduced reaction capacity, but that his defense powers are especially mobilized and permit the development of an intense reaction. If the blood elements fail to respond, the mesenchymal cells may appear in the exudate. Histologic examination reveals in these cases a considerable adventitious increase in round cells and histiocytes. The frequently severe eosinophilia is a form of allergic reaction in the carcinoma patient. In trying to evaluate the significance of these factors with regard to the organism's defense against carcinoma, the authors point out that there is a zone of cellular reaction in which blood and cellular elements participate in various degrees. The reaction of the leukocytes usually stands in a certain relationship to the manifestations of disintegration, particularly to the superficial ulcerations. The degree of mesenchymal reaction is extraordinarily changeable: it may be rather high in mammary carcinomas; it is usually much lower in the superficial cancers of the mucous membrane, and it may be considerable in the carcinomas of the skin, which consists

of pavement epithelium. In the latter type the eosinophilia of the tissues plays a part. These processes have been regarded as a type of defense against the carcinoma, but the authors' investigations seem to indicate that the functioning of the defense powers of the tissues does not prevent the progressive development of the carcinoma and that a considerable portion of the reticulo-endothelial system may have a normal or a supernormal reaction capacity, while the organism succumbs to the further spread of the tumors. During this time of vigorous cellular reactions cachexia advances, the circulation declines and the patient dies as the result of this decline. Thus the process is practically the same as in many (not all) severe acute suppurating infections. Kauffmann's inflammatory reaction does not have the hoped for prognostic significance, and the authors point out that the therapy of carcinoma cannot expect much aid from a modification of the reticulo-endothelial system.

Buerger's Form of Thrombo-Angiitis Obliterans.—Lindenbaum and Kapitza show that Buerger's disease is a special form of thrombo-angiitis that is accompanied by a wandering phlebitis. In many cases this wandering phlebitis appears long before the arteries become involved. The intensity and the distribution of the venous process correspond to the severe changes in the arteries. The authors differentiate three stages of the disease process: (1) migrating phlebitis without or with only slight symptoms on the part of the arteries, (2) migrating phlebitis with noticeable arterial symptoms, and (3) migrating phlebitis with progressive arterial thrombosis. The so-called obscure forms of migrating phlebitis without arterial symptoms must be regarded as the first stage of the disease. From the pathologic histologic aspect, the venous process is a formation of thrombi. During the first phase there appears a new thrombus with inflammatory changes in the vascular wall, disintegration of the muscle fibers in the edematous perivascular cell tissue and formation of granuloma; during the second phase there is organization of the thrombus without granuloma formation, which at first results in the complete obliteration of the vascular lumen and later leads to the formation of a dilated lumen of a type like a cavernous angioma. With regard to the etiology, the authors say that the hypothesis which assumes an allergic origin deserves attention because it is corroborated by the morphologic picture. They consider lumbar sympathectomy the best method of treatment for wandering phlebitis with thrombo-angiitis. The sympathectomy should be done during the second stage of the disease. If done at the right time, it usually arrests the phlebitic process. The prognosis is extremely difficult in Buerger's disease, for there is always the possibility of a sudden outbreak of the thrombo-angiitis with transition into gangrene.

Beiträge zur Klinik der Tuberkulose, Berlin

87: 339-422 (Jan. 22) 1936. Partial Index

*Life Duration of Tubercle Bacilli in Tuberculous Sputum Under Influence of Sunlight and Sun Rays. A. Zink.—p. 339.
Statistics on Concurrence of Carcinoma and Tuberculosis. L. Findeisen.—p. 364.
Distribution of Gold in Organism of Tuberculous Patients After Gold Therapy. W. Gerlach.—p. 370.
Free Fibrin Bodies in Pneumothorax Cavity. L. Funstein.—p. 374.
Value of Percussion in Diagnosis of Inflammatory and Destructive Diseases of Lungs. A. Winkler.—p. 377.
*Movements of Thorax in Unilateral Pneumothorax. Anita Bock.—p. 416.

Life Duration of Tubercle Bacilli in Sputum Exposed to Sun.—Zink made studies on highly infectious sputums that had been expectorated on the street and thus were exposed to sunlight. He found that tubercle bacilli that were capable of growth disappeared at the earliest after two hours and at the latest after five hours. Cultures that were made after four hours generally proved negative. Cooling and experiments at higher altitudes and under the ultraviolet lamp demonstrated that the bactericidal power of sunlight is chiefly due to its ultraviolet components. It was observed too that heat promotes the bactericidal effect. The author stresses that radiation in the high mountains, owing to its greater intensity and its greater content in ultraviolet and short wave rays, has an especially great bactericidal power.

Movements of Thorax in Unilateral Pneumothorax.—Bock points out that the therapeutic effect of pneumothorax is generally ascribed to collapse and immobilization of the lung. Most authorities aim particularly at immobilization. However, it has also been pointed out that it is erroneous to identify collapse and immobilization, the two being not at all synonymous. A collapsed lung is not always immobilized and an immobilized lung is not necessarily collapsed. Pneumothorax treatment may produce considerable collapse and yet not effect immobilization. According to Schnippenkötter immobilization is present only in cases in which the ventilation of the lung is reached. Since a pneumothorax lung is always under the influence of the respiratory pressure fluctuations, immobilization is hardly possible. In unilateral pneumothorax there obtains as a rule only a smaller volume of the lung. Immobilization in unilateral pneumothorax would require either a limitation of the thoracic movements by the pneumothorax or, if the respiratory movements remain unchanged, the mediastinum would have to make respiratory movements. The author studied the thoracic movements of patients with pneumothorax by means of the method devised by Anthony and Hansen. These studies revealed that a unilateral pneumothorax influences the movements of the thoracic wall not at all or only slightly. Limitation of these movements was observed in only a few of the patients. However, it is possible that the lung is nevertheless immobilized as the result of the drawing of the mediastinum toward the healthy side during inspiration. It is extremely difficult to estimate the extent of the mobility of the mediastinum. The author believes that unilateral pneumothorax as a rule does not immobilize the entire collapsed lung, and she says that other observers, particularly Schnippenkötter, made a similar observation, the latter author ascribing the therapeutic effect of pneumothorax chiefly to collapse and not to immobilization. Bock thinks that, although immobilization of the entire pneumothorax lung is not likely, some parts of it may nevertheless become immobilized.

Deutsche medizinische Wochenschrift, Leipzig

62: 169-208 (Jan. 31) 1936. Partial Index

Diagnosis of Heredity of Congenital Physical Defects. M. Lange.—p. 169.
Depth Action of Short Waves. E. Raab.—p. 177.
*Efficiency Without Drinking of Coffee in Relation to Efficiency After Consumption of Coffee With and Without Caffeine. G. Voigt.—p. 179.
Endarteritis Obliterans of Mesenterial Arteries. C. Krauspe.—p. 179.
Physiology and Pathology of Stomach in Kymogram. H. Cramer and J. Pinke.—p. 180.
Case of Unusually Severe Urticaria and Its Treatment. P. Kallós.—p. 181.

Influence of Coffee on Efficiency.—Voigt studied the effect of ordinary and of decaffeinized coffee on the efficiency of soldiers whose service consisted largely in measuring distances from moving objects. The tests were made on ten men and covered a period of eight weeks. The various types of coffee were always given for five days and, in order to differentiate exactly the effects, two coffee-free days were intercalated between the five day periods. The efficiency that existed when no coffee was taken served as a basis of comparison for the efficiency under the influence of ordinary and of decaffeinized coffee. It was found that the drinking of ordinary coffee impaired the efficiency by 23 per cent, whereas the drinking of decaffeinized coffee either did not influence the efficiency or improved it somewhat.

Medizinische Klinik, Berlin

32: 73-104 (Jan. 17) 1936. Partial Index

Modern Therapy of Addison's Disease. S. Thaddea.—p. 76.
*Therapy with Hormones of Female Gonads. H. O. Neumann.—p. 79.
*Genesis and Therapy of Extrasystoles. J. Pal.—p. 84.
*Peculiar Disorders Resulting from Pulmonary Edema in Renal Insufficiency. R. Klima and H. Rosegger.—p. 85.

Therapy with Hormones of Female Gonads.—Neumann shows that, in spite of the great advances in the experimental research on the sex hormones and in spite of the accomplishments of the chemists in preparing hormone extracts, the therapeutic utilization of these active substances is still rather limited. In view of the fact that the genital function is an extremely complicated interaction of many factors, which as yet is only partly understood, the author thinks that it cannot be expected that the therapeutic results will be perfect, the more so since many psychic factors also play a part. It is often extremely difficult to determine which particular factor has disrupted the interaction. Sometimes a treatment is surprisingly successful,

while at other times it fails. The author emphasizes that one should not overlook that the hormones of the gonads influence the entire organism and that the intensity of this action cannot be foretold.

Genesis and Therapy of Extrasystoles.—Pal states that the genesis of extrasystole is not uniform, but that toxic, nervous, psychic and other factors may play a part. He pays especial attention to the extrasystoles that occur intermittently in persons without heart disease. After calling attention to his earlier studies on the detrimental effects of an elevated diaphragm on a diseased heart, particularly those caused by gastric tension resulting from pneumatosis, and to studies on the significance of the inflated stomach in angina pectoris and on the incidence of extrasystoles in pneumatosis, he points out that pneumatosis is usually caused by insufficiency of the cardia by the aspiration of air into the stomach and by conditions of nervous excitation. The persons in whom the author made his observations were mostly healthy. He examined most of them after the noon meal; that is, at a time when the extrasystoles were most frequent. It is necessary to convince these patients that the annoying symptoms are of no particular importance in that they are caused by pneumatosis. The author was able to demonstrate this readily after he had found that, particularly in men, the inflated stomach can be deflated by an eructation while the patient is lying on his left side. In women without heart disease extrasystoles are rarer than in men. However, the author does not imply that an elevation of the diaphragm by an inflation of the dome of the stomach is always present in these extrasystoles, for he points out that the elevation of the diaphragm may be produced also by the intestine. He observed an inflation of the transverse colon particularly in women with the so-called spastic type of constipation. The extrasystoles occurring in these women could be counteracted by overcoming the intestinal disorder. To be sure, the appearance of the extrasystoles is not entirely explained by the elevation of the diaphragm, but the heart also plays a part. Observations in the course of postural changes, which involved changes in the position of the heart but not of the diaphragm, and experiments on dogs indicated that mechanical irritations of the pericardium, which are produced by the abdominal viscera, are the cause of the described extrasystoles. In discussing the treatment of these extrasystoles, the author calls attention to formerly suggested measures regarding the prevention and treatment of pneumatosis and heartburn and also stresses the importance of the prompt evacuation of the stomach and of the intestine. Medicaments for the heart are unnecessary in patients without heart disease.

Peculiar Forms of Pulmonary Edema in Course of Severe Renal Disorders.—Klima and Rosegger report the clinical histories of three patients and state that among eighty patients with chronic nephritis, nephrosclerosis and uremia, they found twenty cases in which roentgenoscopy disclosed pulmonary foci that disappeared in response to renal and cardiac treatment. The majority of these patients had temporary, usually nocturnal, attacks of dyspnea and nearly all had increased blood pressure, an abnormally high rest nitrogen and nephritic renal changes. On the basis of the clinical aspects and of the physical examination, inflammatory pulmonary foci could be excluded; however, the roentgenologic differentiation from inflammatory processes of the lung was considerably more difficult and the roentgenologic diagnosis often was given as lobar pneumonic foci of infiltration. The authors mention the following aspects as the factors that differentiate these nephrogenic pulmonary edemas from the cardiac type: 1. Attacks of dyspnea, which frequently occur during the night and may be accompanied by coughing and by the appearance of foamy or pearly sputum. 2. Hemoptysis, which generally is not severe. 3. Various areas of dulness, which, however, readily escape detection, and crepitation. The latter signs are not restricted to the lower part of the lung and they may even be entirely missing in the lower part. 4. Transience of these symptoms. The author thinks that the localization of the edema, namely, the fact that it leaves the lower portion of the lung free, is the factor which militates most clearly against a cardiac origin. He reviews the roentgenologic differences between cardiac stasis of the lung and the nephrogenic pulmonary edemas, which were described by Zdansky.

Wiener klinische Wochenschrift, Vienna

49: 97-128 (Jan. 24) 1936. Partial Index

Pathogenesis of Chronic Articular Rheumatism. E. Freund.—p. 99.
*Crampus Neurosis and Gout (Aspects of Uratic Crampus Diathesis). A. Vogl.—p. 103.
*Sulfur Therapy in Nurslings. M. Oppenheim and P. Fantl.—p. 107.
Analogies Between Certain Manifestations of Senility and Cushing's Disease. W. Raab.—p. 112.
Clinical Aspects of Hypertrophy of Prostate. R. Paschkis.—p. 113.

Crampus Neurosis and Gout.—Vogl directs attention to a type of muscular cramps designated by Wernicke, who first described it, as crampus neurosis. The author considers this term not quite suitable and shows that the earlier investigations on this disorder did not clarify its etiology. Studies in recent years, however, particularly those conducted by Wilder, disclosed a hyperuricemia in patients with this type of muscular cramps. Further investigations by Wilder and studies conducted by the author himself revealed that a metabolic disturbance of the type of gouty diathesis predisposes to painful muscular cramps and that these cramps have no connection with a neurosis. The author stresses that the appearance of muscular cramps is a frequent and even a typical occurrence in true gout. The appearance of the cramps often precedes the development of true gout by many years. Thus, if in case of a doubtful diagnosis the anamnesis reveals muscular cramps, the disorder is probably gout. The author suggests that Wernicke's term crampus neurosis should be replaced by the more suitable term "uratic crampus diathesis" and the disorder should be classified with the group of disturbances of the uric acid metabolism. For the treatment of uratic crampus diathesis he recommends the same dietetic and medicinal measures that are employed in gout. Injections of calcium are also helpful.

Sulfur Therapy in Nurslings.—According to Oppenheim and Fantl, recent reports indicate that the use of sulfur pastes in nurslings with scabies has resulted in severe disorders and even in death. They concede, however, that nearly all remedies used in the treatment of scabies (Peru balsam, tar, betanaphthol and so on) are likely to produce toxic effects in nurslings and that sulfur is generally considered the least toxic of the parasiticides. The authors state that an ointment which contains sulfur has been used by them regularly in nurslings with skin disorders and particularly in those with scabies. However, because of the practical importance of the toxicity of sulfur, they decided to conduct animal experiments. On the basis of these tests they reach the conclusion that the animal organism tolerates considerable amounts of sulfur and they do not agree with Basch, who had decided that scabies in nurslings should not be treated with sulfur preparations but with other substances. They concede that sulfur therapy may result in undesirable complications, but they point out that there is probably no substance which does not eventually do that. They think that, even though sulfur may not be an ideal substance for the treatment of scabies in nurslings, it nevertheless has its advantages and it causes serious complications only in rare instances. They know of no antiscabetic remedy that is entirely harmless.

Sovetskaya Khirurgiya, Moscow

Pp. 1-400 (No. 6) 1935. Partial Index

*Perforation of Gastric Duodenal Ulcer: One Thousand Cases. S. S. Yudin.—p. 25.
Importance of X-Rays in Diagnosis of Perforated Ulcers. S. V. Ivanova-Podobed.—p. 47.
Study of Etiology of Acute Perforations of Peptic Ulcer. D. A. Arapov and V. F. Grosse.—p. 57.
Principal Stages in Development of Problem of Transfusion of Cadaver Blood. M. G. Skundina.—p. 69.
Biochemical Changes of Cadaver Blood. M. G. Skudina, R. E. Ginzburg and A. V. Rusakov.—p. 78.

Perforation of Gastric Duodenal Ulcer.—Yudin states that the incidence of ulcer disease in women in his general material was 10 per cent and that the incidence of perforation in women was less than 2 per cent. Thus among 1,014 cases of perforation, eighteen were in women. Only two of these were users of tobacco. The curve of incidence increased regularly during the second half of the winter to reach its highest point by the end of the spring, after which it exhibited a decline and reached its lowest point in August. The author speculates on the seasonal increase in perforations by supposing that the decreased use of vegetables and of fruit brings about a state of avitaminosis which renders the tissues less resistant

to the ulcerative process. A considerable number of perforations took place after the big meal of the day, suggesting that overdistention of the stomach acts as a direct etiologic factor. While an adherent of Rosenow's theory of infection as the determining factor in the causation of ulceration as well as in the act of perforation, the author states that gastritis was frequently absent in his cases of perforation. The existence of grip or tonsillitis did not appear to be the determining etiologic factor. Besides the pathognomonic signs of perforation the author emphasizes that the pulse is either normal or slowed and that vomiting is unusual. The phrenicus symptom, or radiation of pain in the shoulder, is helpful and is suggestive of perforation of a duodenal ulcer if the radiation of pain is in the right arm or shoulder, and of a gastric ulcer if the radiation is in the left arm or shoulder. Free gas in the peritoneal cavity is pathognomonic and was demonstrated roentgenologically in 80 per cent. In the treatment of perforation, opinions differ as to whether to limit the operative intervention to the saving of the patient's life or to direct it to the cure of the disease at the same time. Necropsies in cases in which simple closure of the perforation was practiced not infrequently revealed fresh ulceration along the suture line. These ulcers in some of the cases led to fresh perforations. The author believes that the virulent infection present was responsible for the untoward result. Among the advantages of the more radical treatment the author states that gastric resection restores the motor and evacuating function of the stomach, removes the ulcer and the ulcer bearing area, removes the infected area, and results in a maximal lowering of acidity. Organic disease of the heart or of the vascular system, obesity, diabetes, active tuberculosis or nephritis contraindicates radical therapy. The general condition of the patient is a safer indication than the number of hours elapsed since the perforation. Age is the most important factor to consider. Resection is advisable in the early cases only in patients past 45 years. Resections should be performed by experienced surgeons with properly trained assistants. The author prefers spinal anesthesia. The abdomen is always closed without drainage. The mortality rate in a group of 673 partial gastric resections performed in the course of six years for perforation was 9.8 per cent. In operating, the author prefers the first method of Billroth. His mortality rate in another series of 331 resections performed during 1933 and 1934 was 7.8 per cent. The mortality rate for 121 resections performed by him in 1935 was still further lowered to 6.6 per cent.

Hospitalstidende, Copenhagen

79: 29-56 (Jan. 14) 1936

Spinal Fracture: Two Hundred and Fifty Cases. C. C. Fleischer-Hansen.—p. 29.

*Preventive Treatment Against Thrombosis and Phlebitis. S. C. Dalsgaard.—p. 42.

Syphilis and Syphilology. S. Lomholt.—p. 47.

Preventive Treatment Against Thrombosis and Phlebitis.—To provide a means of effective exercise as early as possible after operation, Dalsgaard has devised an apparatus to be fastened to the foot of the bed, which applies the principle of the bicycle and consists of an axis and pedals, the latter with shoes attached to hold the patient's feet. He regards the active muscular work of the lower extremities in pedaling the "bed bicycle" and the pressure rhythmically exerted by the bottoms of the feet as most important in prophylaxis against thrombosis and phlebitis, since it increases the rapidity of the venous circulation and thus hinders chemical changes in the blood.

79: 57-84 (Jan. 21) 1936

*Origin, Symptoms and Treatment of Pulmonary Emphysema in New Light. H. Heckscher.—p. 57.

Gymnastic Exercise Applied in Treatment of Patients with Pulmonary Emphysema. Agnete Bertram.—p. 74.

Investigations on Serum Amylase in Chronic Alcoholics: Preliminary Report. H. Christiansen.—p. 79.

Origin, Symptoms and Treatment of Pulmonary Emphysema in New Light.—Heckscher defines pulmonary emphysema as a disease in which the objective cardinal symptom is a stethoscopically demonstrable extension of the boundaries of both lungs when the patient is examined in the natural standing position, the thorax and lungs being in their habitual position. His 181 cases in which treatment was administered during the last four years represent forms from the mildest with purely functional disturbances to older chronic cases with organic changes in lungs, bronchi and circulatory organs. Twelve cases are described. The condition is almost always due to functional disturbances. Treatment must be directed to the causative factor or factors, such as improper posture ("soldier position," scoliosis, kyphosis, kyphoscoliosis, lordotic-phthisic habitus), adiposity, disorders of the mucous membranes of the respiratory passages, neuroses, heart disease and too heavy physical labor. In most cases the treatment must be combined with gymnastic exercises designed to correct the defects in the posture of the back and thorax and to establish abdominal respiration, leading to normal respiratory rate, reduction of the emphysema and disappearance of the subjective symptoms. Individualization is necessary in the exercises.

Svenska Läkaresällskapets Handlingar, Stockholm

61: 197-244, 1935

*Remote Effects of Removal of Normal Spleen in Man: Contribution to Pathophysiology of Human Spleen. E. Ask-Upmark.—p. 197.

Effects of Removal of Normal Spleen in Man.—Among Ask-Upmark's 100 cases from Sweden in which the normal spleen had been removed (in ninety-nine cases owing to traumatic injury and in one case to movable spleen), from one to twenty-seven years earlier, and ninety-four cases from the literature, eleven deaths had occurred, five of them from pulmonary tuberculosis. No increased susceptibility to infections or to malignant tumors was seen in his material, but he emphasizes that only from 15 to 18 per cent had reached the cancer age on after-examination. A tendency to rapid exhaustion was not infrequently present. Various disorders in the digestive tract were noted in about 10 per cent; likewise disturbances in the nervous system and metabolic activities, and changes in body weight. In most cases the morbidity was the same as in the average person. The author thinks that persons whose normal spleen was removed a year earlier should be accepted for insurance on the usual terms, and, if not accepted, should be examined at least once yearly in the expectation of an eventual bodily adjustment to the splenectomy. Anatomically, physiologically and clinically his investigations indicate that the spleen, while not necessary to life, should be removed only on vital indication.

Ugeskrift for Læger, Copenhagen

97: 1151-1172 (Nov. 14) 1935

*Cystic Mastopathy and Its Treatment with Estrin. E. Dahl-Iversen.—p. 1151.

*Treatment of Crises in Addison's Disease. P. Schultzer.—p. 1153.

Cystic Mastopathy and Its Treatment with Estrogenic Substance.—In younger patients Dahl-Iversen advises conservative treatment and considers surgical treatment only when conservative treatment is without effect and the patient's complaints or a suggestive change in the clinical picture indicates operation. Support of the affected breast without compression is recommended, together with oral administration of from 2,000 to 3,000 mouse units of estrogenic substance daily or intragluteal administration of from 10,000 to 20,000 mouse units weekly for at least half a year, then continued at intervals to control the symptoms. The author says that conservative treatment should also be tried in women past the middle forties; but here aggravation locally and generally may occur under treatment with estrogenic substance. In all patients and particularly in the older patients, conservative treatment calls for close and continued observation. In the majority of cases with a clinically localized process, partial extirpation is followed by freedom from symptoms for a long period of years; continued observation is necessary. In cases with diffuse changes, ablation of the breast is the rational method, possibly with preservation of the skin, areola and papilla. If the microscopic examination after partial or total excision shows malignant changes, a secondary radical operation is indicated.

Treatment of Crises in Addison's Disease.—Schultzer finds that treatment with adrenal cortex extract alone or in combination with sodium chloride has an excellent effect in acute insufficiency of Addison's disease. The improvement in the general condition is reflected in the patient's appearance. Reduction in blood urea values affords a numerical expression of the improvement. No certain information is obtained from the blood chloride.

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